THE CROSS-FERTILIZATION OF THE BOTANICAL AND THE LITERARY

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THE CROSS-FERTILIZATION OF THE BOTANICAL AND THE LITERARY

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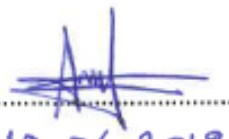
Signature 

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ABSTRACT

The Cross-Fertilization of the Botanical and the Literary

Plants are highly complex beings with sophisticated strategies for surviving, thriving and coexisting with fellow members of their own and other species on this planet. Yet the Aristotelean notion that plants are passive and insensitive creatures which pervaded the sciences for centuries is still ingrained in society's approach to plants. In order to extend moral consideration and responsibility to plants, first we need to make them visible. Science helps cure "plant-blindness" by bringing their complexity to the front. However, other forms of plant knowledge contribute to, and at times compensate for what "scientific" thinking leaves out. Resonating Gary Snyder's depth ecology, an Ecopoetics that incorporates diverse approaches becomes an answer for a worldview that acknowledges the "…autonomy and integrity of the non-human…," vegetal other. In Howard Nemerov's "Learning the Trees," poetry and botany, specifically plant systematics, come together to reflect on the possibilities and limits inherent in each "language" in "hearing" and "speaking" trees. Whereas, with his Greenhouse poems, Theodore Roethke goes into the cracks and crevices of being, entangled with vegetal life, and brings weeds, vegetal outcasts, out of our peripheral vision, transforming the way we see them. Besides exploring the diverse ways mushrooms have fruited in the poetry of Snyder, Mary Oliver and Marvin Bell, the chapter explores how nature literacy, place literacy and science literacy infiltrate the poems and how these tributaries of knowing help create new metaphors, connections and patterns in multispecies story-telling between humans and fungi.

ÖZET

Botanik ile Edebi Olanın Çapraz Döllenmesi

Bitkiler hayatta kalmak, büyümek ve türdeş ve türdeş olmayan canlılarla birlikte yaşamlarını sürdürmek için oldukça sofistike stratejileri olan canlılardır. Fakat Aristo'ya dayanan ve bilimi yüzyıllarca etkisi altında bulundurmuş olan, bitkilerin pasif ve duyusuz canlılar olduğu sanısı hala toplumun bitkilere yaklaşımında kendini göstermektedir. Bitkileri etik anlamda göz önünde bulundurmak ve onlara dair sorumluluk üstlenmek için, öncelikle onları görünür kılmak gerekmektedir. Bitki bilimi bitkilerin karmaşıklığını göz önüne getirerek "bitki körlüğü"nü ortadan kaldırmaya yardımcı olmaktadır. Fakat bilim dışındaki diğer bitki bilgelikleri de "bilimsel" yaklaşıma katkıda bulunup, yer yer ise bilimsel yaklaşımın dışarıda bıraktıklarını telafi etmekte veya tamamlamaktadır. Gary Snyder'ın derin ekolojisini yankılayarak, çok çeşitli yaklaşımları bünyesinde barındıran bir Ekopoetika, insan-olmayan, bitkisel ötekinin, "otonomisi ve bütünlüğünü" kabul eden bir dünya görüşü için bir cevap oluşturmaktadır. Howard Nemerov'un "Ağaçları Öğrenmek" şiirinde, şiir ve botanik, özellikle bitki sistematiği bir araya gelerek her iki dilin ağaçları "duymak" ve ağaçları "konuşmak" konusundaki imkanlarını ve sınırlarını irdelemektedir. Öte yandan, Theodore Roethke, Sera şiirleriyle birlikte, varlığın ufak çatlakları ve aralıklarına kadar girip, otları periferik görme alanımızdan çıkararak bu bitkisel "öteki"lere olan bakış açımızı dönüştürmektedir. Sonraki bölüm ise mantarların Snyder, Mary Oliver, ve Marvin Bell şiirlerinde hangi şekillerde meyvelendiğini keşfetmenin yanı sıra, doğa bilgeliğinin, yer/yakın çevre bilgeliği ve bilim bilgeliğinin bu şiirlere nasıl sızdığını ve bu bilgi kollarının, mantarlar ve

insanlar arasındaki çok-türlü hikayelerin anlatımında yeni metaforlar, bağlantılar, ve örüntüler oluşturmada nasıl yardımcı olduğunu keşfetmektedir.

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TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION 1

CHAPTER 2: PLANT SYSTEMATICS: LEARNING THE LANGUAGE OF TREES IN HOWARD NEMEROV'S POETRY 12

CHAPTER 3: "THE UGLY OF THE UNIVERSE": WEEDS IN THEODORE ROETHKE'S POETRY 31

CHAPTER 4: EXPLORING THE FUNGAL OTHER IN GARY SNYDER, MARY OLIVER AND MARVIN BELL'S POETRY 51

4.1 MH 101: An introduction to mushroom hunting with Gary Snyder's "The Wild Mushroom'' 54

4.2 Mary Oliver: through fungal pathways 65

4.3 Marvin Bell: "The Book of the Dead Man (Fungi)"…… 76

CHAPTER 5: CONCLUSION 95

REFERENCES 100

CHAPTER 1

INTRODUCTION

For centuries plants have been viewed as "insensitive" and passive beings. Oftentimes they have been dismissed simply as props in the green, homogenous background in nature. However, with ever-growing data provided by the plant sciences and other fields that come into contact with the plant question, this long-standing, persistent misconception is being re- considered. As Patricia Vieira et al. (2016) put forth in *The Green Thread: Dialogues with the Vegetal World,* "[a] growing area of scholarship that, as a whole, could be called plant studies seeks to redress the long-standing biases that have proscribed plants from the spheres of intelligence, agency and ethics" (p. x).

When we strip plants of intelligence and agency, it appears that we readily deprive them of any ethical considerations. One could argue that this "long-standing bias" is rooted in what James Wandersee and Elisabeth E. Schussler (1999) in "A Model of Plant Blindness," first termed "plant blindness" which refers to "the inability to see or notice the plants in one's own environment, leading to the inability to recognize the importance of plants in the biosphere and in human affairs" (Wandersee and Schussler, 1999, cited. in Gagliano, 2016, p. 28). In the chapter "Seeing Green: The Re- discovery of Nature's Wisdom" in *The Green Thread: Dialogues with the Vegetal World,* Monica Gagliano (2016) too argues that "…[o]ur modern Western societies are afflicted by *plant blindness,* a pervasive condition inherited from our forefather Aristotle and accountable for the current state of vegetal disregard and hence environmental catastrophe." (p. 19). Therefore,

if one is to speak of a change in our consideration and treatment of the vegetal world, Gagliano proposes that "the solution to this state of affairs rests in a radical change of perspective…" (p. 19). She explains that while some of the earliest Greek philosophers such as Empedocles, Anaxagoras and Plato believed that plants, like animals, were sensitive organisms, "[i]t was Aristotle who first positioned plants outside of the sensitive life domain and used plant *insensitivity* as the key criterion to differentiate between plants and animals (p. 20).[1] As Gagliano puts it, "Aristotle's zoocentric perspective of the sensorial world and his "default position of plant exclusion" had a profound and long- lasting influence on virtually all authors who came after him, ultimately fathering the Western paradigm of modern science (p. 20). His impact has been profound and enduring, so much so that "…specifically in regards to plants, we had to wait until the seventeenth century for experimental botanists to recognize the fallacies in his fundamental assumptions" (p. 20).[2]

[1] In Walter Stanley Hett's (1965) English translation *Aristotle, Minor Works: On Colours, On Things Heard, Physiognomics, On Plants, On Marvellous Things Heard, Mechanical Problems, On Indivisible Lines, Situations and Names of Winds, On Melissus, Xenophanes, and Gorgias,* one can find Aristotle's comments on the three philosophers mentioned in his chapter "On Plants" Aristotle states that "Anaxagoras and Empedocles maintain that plants are moved by desire, and they assert emphatically that they can feel and experience both pain and pleasure. Anaxagoras says that plants are animals, and feel both pleasure and pain, concluding this from the fall of their leaves and from their growth; Empedocles supposed that the two classes [i.e. plants and animals] were mixed in plants. Similarly Plato averred that plants must know desire, because of the extreme demands of their nutritive capacity" (p. 143). In other words, Gagliano's overview of the thought of Anaxagoras, Empedocles, and Plato's on plants originates in the comments of Aristotle himself.

[2] Charles Webster (1966) in "The Recognition of Plant Sensitivity by English Botanists in the Seventeenth Century" explains that "[d]uring this period an experimental study of plant movements was promoted, which led to the postulation of a theory of plant sensitivity" (p. 5). He indicates that "[e]vidence about plant movements had been accumulating since antiquity, yet the concept of plant sensitivity did not appear until the mid-seventeenth century, during the revival of experimental science" (p. 23). The studies Webster refers to mostly centre around phototropism, and plant movement. Among the many that contribute to the discussion of plant sensitivity, Webster highlights the botanist Thomas Browne in whom "…we find the assimilation of the influences of the Renaissance naturalists and the new experimental approach to physiology" (p. 23). That is, "[h]e combined an enthusiasm for observing nature's curiosities and minutiae with a genius for patient experimental research" (p. 23). "[T]he concept of plant sensitivity resulted from his work and that of his similarly gifted friend and experimenter, Henry Power" (p. 23). Webster explains that the impetus that research on plant movement gained in the seventeenth century was lost and that "the idea

Quoting Wandersee and Schussler, Gagliano (2016) suggests that "the misguided, anthropocentric ranking of plants as inferior to animals, leading to the erroneous conclusion that they are unworthy of human consideration" shapes a society that pays no attention to plants, whose fundamental role is to ensure life on earth (p. 21). Paying no attention to or having no intention to improve vision means pushing aside and ignoring the fundamental significance of plants within the ecosystem. The question, then, arises: "How can any society recognize that plant conservation is one of humanity's most crucial issues, when it literally cannot "see" plants?" (Gagliano, 2016, p. 21). One could argue that in order to re-adjust the erroneous threads in this cosmology that we have embraced for so long, we should first start by treating the condition that is preventing one from seeing plants, to reform our vision to include plants. "To start treating this affliction known as *plant blindness,"* Gagliano suggests that "the broken Aristotelian spectacles we are wearing must be removed and the worldview we are subscribing to must be re-considered" (p. 21). In "treating" plant blindness, scientific findings and the questions plant sciences pose provide a major standing point for a new perspective towards plants, and depart from the traces of the biased approach that was further influenced and encouraged by the Aristotelian premises.

The research findings in the fields of plant-studies only highlight and reaffirm the fact that plants are highly complex beings that are worthy of attention, with highly developed strategies for surviving, thriving and coexisting with fellow members of their own and other species on this planet. As opposed to the traditional notion that for centuries viewed plants as passive and insensitive

appeared again during the latter part of the eighteenth century, but it was not accepted until Charles Darwin's generation (p. 23)

creatures, considering the scientific observations will help one to refute this notion and reassess a better-informed vision to perceive plants as the very active and sophisticated creatures that they are. As Gagliano also states"…[i]t is borne out by the available evidence that plants, like all living organisms, are very sensitive and active, monitoring and integrating many parameters from their environment and using numerous signaling systems to sense, assess, respond and even facilitate each other by actively acquiring information from their surroundings" (21-22). Examples of such dynamic interactions range from profoundly sophisticated defense mechanisms of plants such as the wild tobacco which, when under attack by an insect larvae, uses volatile organic compounds to signal the presence of an insect attack to its neighboring plants, warning them to take prior action, while also attracting the predator to attack the infesting insect larvae. This is an example of both inter and intra-species co-operation in plants. Another example, Gagliano, quoting Michael Proctor et al.'s (1996) *The Natural History of Pollination*, provides is the "buzz pollination" of flowers "where the pollen is released from the flowers only when they are vibrated at the correct sound frequency, a feat achieved by bees that have co-evolved to vibrate their flight muscle appropriately (p. 24). Moreover, "many plants also have extensive root grafting (that happens when trunks, branches, or roots of two plants make contact and start growing together), which allows them to transmit signals between individuals and between species via their own anastomosed vascular system…" (p. 25). And perhaps most fascinatingly is the underground mycorrhizal networks that connect trees which John Whitfield (2007) presents in his article "Fungal Roles in Soil Ecology: Underground Networking": with the help of "the fungal network that underlies the forest and participates in a

cooperative give-and-take with hundreds of plants" he argues that diversity is facilitated and

> [e]merging clues suggest that this covert sub-terranean interplay influences many aspects of the forest community, including which plants live, which die, the effects of physical stresses such as heat and drought, and what happens after the introduction of new species. Add the controversial possibility that fungi mediate resource sharing between different plant species and a picture emerges of a Robin Hood of the soil, subsidizing those less able to make food, and by so doing, helping its own cause by promoting a diverse range of plant partners (p. 136).

Likewise, "Suzanne Simard of the University of British Columbia in Vancouver, Canada, says fungal networks may allow trees to support their own seedlings, perhaps providing the trees with an evolutionary benefit (as cited in Whitfield, 2007, p. 137). Quoting Simard, Whitfield (2007) states that "[t]here's lots of evidence that mature trees facilitate the growth of conspecific seedlings beneath them, and the evidence is growing that networks are important" (p. 137). Therefore, it can be seen that the range of sophisticated interactions which plants engage in are not limited to defense and the ensuring of individual wellbeing but could also include cooperation. Such "…examples illustrating how extraordinary the complexity of plant behaviour truly is and how this understanding makes it, in fact, very easy for us to "see" plants" (Gagliano, 2016, p. 22). Of the countless other instances, the few examples given here help demonstrate the complexity of plants and help disprove the notion that plants are less complex, primitive organisms. These examples discourage us from seeing plants as passive and insensitive.

The matter of starting to "see" plants can be viewed as a first step away from this "default condition" called plant blindness. However, it is necessary to take a further look into the plant question. Michael Marder, in his *Plant Thinking: A Philosophy of Vegetal Life* suggests that "the interest in the 'question of the

animal' has contributed to the growing field of environmental ethics and to the de-centering of the metaphysical image of the human in relation to its non-human others" (p. 1). However, in his article "for a Phytocentrism to Come," although this "question of the animal" intended to challenge the anthropocentric worldview, he argues that zoocentrism actually reiterated a perspective parallel to the very same human-centred stance it attempted to overthrow: "[i]n ethical theories, practices, and discourses, zoocentrism similarly shores up anthropocentrism, and vice versa. Understood as "the animal-centered, especially vertebrate-centered philosophy" (Vilkka 1997, p. 37). He further explains:

> …the zōe of zoocentrism is rendered familiar thanks to its reduction to the vitality of higher animals, i.e., vertebrates with a well-developed nervous system. These animals, like us, feel pain and suffer, are easily individuated, and have a familiar perceptual apparatus. The circle of logos, whose circumference used to demarcate the boundaries between a life that was killable and one that wasn't (Haraway 2007, 80), dilates so as to shelter sentient creatures conscious of pain. (p. 5)

Thus, Marder suggests that by "redirect[ing] its attention toward animals—and a highly specific cross-section of the animal kingdom at that, zoocentrism has lapsed into an ethical myopia when it comes to our relation to nonsentient forms of life, not to mention the uncritical projection of human values onto a non-human world" (p. 5). Therefore, Marder argues that while zoocentrism is a much needed and significant attempt to decenter the human because it helps humans problematize their long-established anthropocentric biases, it "continues to revolve around the human, orbiting this figure in more or less distant ellipses" (p.5). As an alternative to this problem of falling into the self-same notions, Michael Marder proposes a Phytocentric, that is, a plant-centred perspective:

> …the center of phytocentrism is internally de-centered, as it is occupied by phuton—a plant, a growing being, a miniature mirror of phusis [growth] itself. . . . In contrast to Blaise Pascal's Nature, it is a circle, whose center is nowhere and the circumference everywhere. The plant

> itself lacks a vital center, equivalent to the heart or the brain of an animal; although in our imaginary the root stands for something like the irreplaceable and essential origin of things, the truth of the matter is that it is not the sole source of vegetal life. Left in water, twigs detached from the mother plant can develop rootlets of their own, exhibiting incredible tenacity and plasticity (p. 13).

Although Marder makes an interesting point about the "decentering" of the centre in plant life he goes on to argue that twigs (and actually sometimes leaves) can start growing roots/continuing life even when severed from the "main plant." This is true, however, it is not applicable to all plants. Therefore, like the vertebrates being privileged in zoocentrism, Marder may as well be privileging some plants over others in his analogy (p. 4). Hence, if one is to look into the plant question in detail, this generalization may prove too reductive. Although it does not necessarily have to be scientifically accurate, here the discrepancy seems important as this appears to be what he builds his analogy on. Although much of his argument is valid and valuable, it is still questionable whether phytocentrism offers the answer for a non-anthropocentric, all-inclusive ecology.

Marder (2013) in *Plant-Thinking: A Philosophy of Vegetal Life* argues that if animals have suffered marginalization throughout history as the "other," then non-human, non-animal beings such as plants have populated the "margin of the margin," the zone of absolute obscurity (p. 2). He explains that "[p]articularly after the scientific paradigm gained its hard-won independence from the theologico-philosophical dogma in early modernity, philosophers, for the most part, refrained from problematizing vegetal life, which they entrusted to the care of botanists and, later on, geneticists, ecologists, and microbiologists. The being of plants was no longer question-worthy" (p. 2). Marder states that in the absence of the will to think through the logic of vegetal life, beyond its biochemical, cellular, or micro-molecular processes and ecological patterns, philosophers readily assumed that

within the broad evolutionary frame of reference, the existence of plants is less developed or less differentiated than their animal and human counterparts and that therefore vegetal beings are unconditionally available for unlimited use and exploitation (p. 3). Therefore, it could be argued that plant blindness created the initial conditions that prevented people from noticing the presence of plants, which prevented further ethical question regarding the vegetal life. However, here we see a different approach more than simply "not-noticing," in which an active suppression of the plant question takes place for the sake of utilitarian motives. Plant blindness can be prevented or overcome with the help of knowledge or first-hand experience that brings plants into the field of vision and liberates one from the "intellectual, perceptual or visual processing traps that lead to plant blindness" (Wandersee, Schussler, 1999, p.9). On the other hand, the questions of the vegetal posed within the sciences only, fail to open up diverse thought on the ethical treatment of plants.

As Marder argues that although, like humans, plants are living creatures, "we fail to detect the slightest semblance of our own life in them" and that the absence of will to ask the most basic questions about vegetal life has become "the breeding ground for their ethical neglect" (p. 3). He suggests that every day, as well as, scientific ways of thinking have not yet completely emancipated themselves from the modern version of "The Great Chain of Being," in which plants rank lower in the hierarchy (p. 3). Therefore, one could argue that besides "treating" plant blindness, with the help of plant sciences, and its questions, there is a necessity to delve further into deeper questions about the nature and position of plants. While Marder takes on the task of finding a ground for discussion on the "intersection" between an ontological and an ethical approach, there are other

ways of approaching botany and being. The field of Ecopoetics offers one such approach.

Firstly, one can understand from the discussion of plant blindness that the neglect towards the vegetal world stems mostly from not knowing and not seeing. Therefore, in order to extend moral consideration and responsibility to plants, first we need to make them visible. This thesis will present poems that feature plants and fungi. Yet featuring them, simply making the poem *about* plants is not enough. The aim will be to see in what ways these poems contribute to the larger discourse regarding plants and fungi, and in what ways they remain weak in this purpose.

Although science serves as an aid in curing "plant-blindness" by bringing their complexity to the front and helping to bring plants more visibility, it is not enough on its own, or simply is not concerned with the issue of plant ethics and other questions that may arise from further considerations regarding vegetal life. Here, other forms of plant knowledge also contribute to, and at times compensate for what "scientific" thinking leaves out. An Ecopoetics that incorporates these various approaches becomes one answer for a more multi-species, multi-vocal, all-inclusive and inter-connected worldview. The particularities of "how" this could be achieved will remain a question for further thought in the upcoming chapters. However, Gary Snyder's call for a new nature writing provides a ground for and points to the way to the kind of poetry that will resonate with the concerns posed here regarding the plant question. Snyder, in his chapter "Unnatural Writing" from his *A Place in Space* calls for a poetics that will help "acknowledge the autonomy and integrity of the nonhuman part of the world, an "Other" that we are barely beginning to be able to know" (p. 168). This "Other," in this case, will

be plants and other creatures that are closely entangled in the vegetal world, to include various life forms such as fungi which are considered neither plant nor animal, but a distinct kingdom on their own. Furthermore, Snyder proposes that

> [i]n disclosing, discovering, the wild world with our kind of writing, we may find ourselves breaking into unfamiliar territories that do not seem anything like what was called "nature writing" in the past. The work of the art of the wild can well be irreverent, inharmonious, ugly, frazzled, unpredictable, simple and clear—or virtually inaccessible (p. 169).

Following Snyder's suggestions, the poems that will be addressed here show great diversity in and among themselves not only in their treatment of plants and fungi but also in terms of their domains, many of them pushing on and often extending across borders of disciplines and of what has been considered up till today the familiar territory of poetry.

In terms of the subject matter that constitutes this new kind of writing, Snyder points out that "life in the wild is not just eating berries in the sunlight." He imagines "a depth ecology" that would go to the dark side of nature. He suggests that "[w]ild systems are in one elevated sense above criticism, but they can also be seen as irrational, moldy, cruel, parasitic" (p. 169). He continues:

> Life is not just diurnal and a property of large interesting vertebrates, it is also nocturnal, anaerobic, cannibalistic, microscopic, digestive, fermentative: cooking away in the warm dark. Life is well maintained at a four mile ocean depth, is waiting and sustained on a frozen rock wall, and clinging and nourished in hundred degree dessert temperatures. And there is a world of nature on the decay side, a world of beings who do rot and decay on the decay side. (p. 169)

The poems brought together in this study all have in common the feature of inhabiting the "dark side of nature." If plants populate the "margin of the margins," as Michael Marder points out, then the "weeds," fungi, epiphytes, bryophytes, lichen, carnivorous plants, and bog dwelling plants are all denizens of the vegetal "Other," the marginalized of the plant world. The poetry of Howard Nemerov,

Theodore Roethke, Gary Snyder, Mary Oliver, and Marvin Bell will engage us in stories of the marginalized fungal and vegetal “Other.”

CHAPTER 2

PLANT SYSTEMATICS: LEARNING THE LANGUAGE OF TREES IN HOWARD NEMEROV'S POETRY

Two central concerns in Ecopoetics are the experience of nature and the representation of the experience of nature. How does one "learn" or experience nature? What is the limit to our "understanding" of the natural environment and the beings that inhabit it? What is the role and effect of language in this experience itself and in the representation (or the performance) of this experience? What does language leave out? Is this really a "loss" or is it simply, and naturally, the way we conceive and express things? In other words, how does one write nature? Such questions are not only questions of and for those interested in Ecopoetics but are ones posed for the science of botany as well. The same critical question of representation in Ecopoetics also lies within the plant sciences. Specifically, in the plant sciences, systematics directly deals with the question of understanding the plants that inhabit this world, their evolutionary relationship as a group, and looks for the best way to represent them individually. In other words, plant sciences and poetics both engage in the difficulties and uncertainties of knowing and naming.

Howard Nemerov's poem "Learning the Trees" gives us an insight to the sort of questions relevant to both domains concerning the nature of language, and our way of "learning" plants. Although the poem's title appears as a subtle promise of "learning the trees," the first line revokes this expectation and introduces a prerequisite for this lesson:

Before you can learn the trees, you have to learn

The language of the trees.

Learning the trees requires more than a direct, first-hand encounter with a tree. The task of simply going out in nature and experiencing a tree entails some preparation. Learning the "language of the trees," Nemerov suggests, requires no tree to be present nor does it require going outside in search of a tree because,

-That's done indoors,

Out of a book, which now you think of it

Is one of the transformations of a tree.

All that is involved in this preparation step is a book on plants and a keen reader. The language of the trees is not learned outdoors where the trees are, but rather "indoors," antithetically "out" of a book. So there is a shift in the location where the learning takes place and in the focus of learning, which is now the "language" of the trees and not directly the trees themselves. This is only one of the "transformations" that could be noted here. Another transformation is on a physical level, the tree turned into paper. The act of learning the language of the trees is not done by looking at the agents of the language but rather by looking at an altered version of a tree or trees that are shaped into a form that is defined by its functionality, by what it teaches us, what it "speaks" to us. So we alter the form to make the tree speak to us in or of the language of trees instead of directly learning it from the trees themselves, without alteration, without further delay or intermediator. Hence, one asks, does this book speak in the language of the trees or of the language of the trees? It remains a question whether this language is the language of the trees or the language of people, or an interfusion.

The language the speaker refers to in the second stanza is plant systematics.

Michael G. Simpson, in his book Plant Systematics, defines systematics as "…a science that includes and encompasses traditional taxonomy, the description, identification, nomenclature, and classification of organisms, and that has as its primary goal the reconstruction of phylogeny, or evolutionary history, of life" (p. 9). The upcoming stanzas serve almost as a mini-introductory course to the terminology of plant description and identification. First, the following lines carry us into a landscape of terms in plant morphology, "[the] field of study dealing with the external and gross internal structure of plant organs" (Simpson 348):

The words themselves are a delight to learn,
You might be in a foreign land of terms
Like samara, capsule, drupe, legume and pome,
Where bark is papery, plated, warty or smooth.

Samara, capsule, drupe, legume and pome are all terms that describe different types of simple fruits, namely fruits "derived from a single pistil of one flower" (Simpson 384). Other fruit types include "aggregate" and "multiple" fruit types (Simpson 384). However, what is useful to note here is that Nemerov's grouping of these botanical terms is not arbitrary but rather designed to include terms from only one of these categories, showing in effect his acquaintance, even if only to some extent, with the categories of plant systematics. The line goes on to list some terms used to describe plant texture. As one may guess, these characteristics constitute only a tiny fraction of the vast lexicon used in plant systematics.

The next stanza becomes more specialized and focuses on learning the terms used for the description of leaves

But best of all are the words that shape the leaves—
Orbicular, cordate, cleft and reniform—

And their venation—palmate and parallel—

And tips—acute, truncate, auriculate.

The way the words are listed here is playfully rhythmic, the internal half rhymes (cordate, palmate, truncate, articulate) giving the stanza the sound and air of a nursery rhyme. Along with the speaker's comment that the words used for leaves are "best of all," the musicality of the stanza makes the task of learning these words appear a light and enjoyable task. The terms Nemerov includes are used to describe the shape of leaves, the venation, namely the "pattern of veins and vein branching" and their tips (Simpson 361). In an interview quoted in Miriam Marty Clark's "Between the wave and particle: Figuring Science in Howard Nemerov's Poems," he states: "I've sort of despaired of ever knowing anything...I can hunt around snapping up unconsidered metaphors where I can. But that oughtn't to be confused with the knowledge of physics and biology" (p. 37). The fact that he is well familiar with plant systematics is apparent, however, and his knowledge of the distinct categories and the descriptive words that belong to each of those categories is worthy of attention. It is his choice of words, choices among many others which could have been, and the order in which he lists these words makes his systematics poetic.

On the other hand, one could argue that the words that shape the leaves are not only botanical terms to describe the shape of the leaves but they also actively "shape," change our perception as well as our representation of the trees. Therefore, learning the language of the trees from a book of plant systematics is in this way another "transformation" of a tree as expressed in the first stanza. Gary Snyder, in his essay "Language goes Two Ways" suggests that language "…enables us to have a small window onto an independently existing world," but, he continues, "...it also shapes — via its very structures and vocabularies — how we see that world" (p.

174). Therefore, while language provides us with an opening to see the world from, it also actively shapes the way we perceive and process that world. Likewise systematics, the language of trees we are advised to learn, also goes two ways: it gives us a set of vocabulary and concepts to see and understand the trees, whereas with its vocabulary it also "shapes" the way we see those trees. What we look at becomes filtered through the categories and descriptive terminology of plant features we have equipped ourselves with. This transforms the tree that we see.

Nemerov now says that once we are partially familiar with the types of plant characteristics to look for, we can transfer the act of learning outdoors and apply our set of newly acquired words to the actual landscape:

> Sufficiently provided, you may now
> Go forth to the forests and the shady streets
> To see how the chaos of experience
> Answers to catalogue and category.

The last two lines introduce a new mission for seeing: how does "the chaos of experience" respond to the catalogue and category we have at hand? The three words, "chaos, catalogue and category," are stacked against each other, the clacking sound of the semantically contrastive word "chaos" hitting the sharp phonetic edges of "ca-ta-logue" and "ca-te-gory." Although the three words begin with the sharp "k" alliteration, "chaos," unlike "catalogue" and "category" ends with a smooth and mellifluous sound. While chaos seems to denote disorder, the open vowels are soothing to the ear while the latter two alliterated nouns are supposedly signs of an ordered system yet sound more rigid and disruptive to the general flow of the sentence. The apparent implication of the juxtaposition of these words is that the "outside" world is chaotic and disorderly, while the landscape the book offers is

structured and organized. The sounds of the words, however, suggest an alternative to this ostensible semantic binary. Gary Snyder in “Language Goes Two Ways” explains the Western notion that language is an opposing force that works against and “systematises” the chaotic universe:

> Language, in the Occident, has been popularly described as that by which humans bring order to the “chaos of the world.” In this view, human intelligence flowers through the supposedly unique faculty of language, and imposes a net of categories on an untidy universe. The more objective and rational the language, it was thought, the more accurate this undertaking would be. (p. 173)

The poem, at this point, presents precisely this notion of language as an “organizing” system. In fact, in his essay “Unnatural Writing” Snyder directly quotes Nemerov: “[c]ivilization, mirrored in language, is the garden where relations grow: outside the garden is the wild abyss” (p. 166). In response to this, he states that “Nemerov here proposes that language is somehow implicitly civilized or civilizing, that civilization is orderly, that intrahuman relations are the pinnacle of experience (as though all of us, and life on the planet, were not interrelated), and that “wild” means “abyssal,” disorderly, and chaotic” (166-167).

In contrast, Snyder argues that “consciousness, mind, imagination, and *language* are fundamentally wild. “Wild” as in wild ecosystems– richly interconnected, interdependent, and incredibly complex” (p. 168). Quite contrarily, Snyder sees this wildness as something to be celebrated, rather than something to be “organized.” That is why in his “Language Goes Two Ways” he proposes that

> Ordinary Good Writing” is like a garden that is producing exactly what you want, by virtue of lots of weeding and cultivating. What you get is what you plant, like a row of beans. But really good writing is both inside and outside the fence. It can be few beans, but also some wild poppies, vetches, mariposa lilies, ceanothus, and some juncos and yellow jackets thrown in. (176-177)

The more contained language may therefore give us a more contained and predictable result, he argues. Like the language of systematics, it tells us exactly what to look for, how to name what we see, and how to describe what we see. On the other hand, on its own, it does not allow us the space to see the incredibly diverse experience and knowledge that the trees have to offer.

However, the speaker in the upcoming stanza of the poem presents this "organizing" aspect of science as ambiguous and failing to meet expectations. In *Botany: An Introduction to Plant Biology*, James D. Mauseth explains in his chapter "Classification and Systematics*"* that "[t]he goal of modern systematics is to understand each of [the] evolutionary lines [between organisms] and to have a system of names–nomenclature–that reflects their relationship accurately" (p. 413). While this concern for "accuracy" present within the field of plant sciences is reflected in the early lines of the poem, the next stanza problematizes this and one can sense a shift in the tone as the speaker ironically answers his previous inquiry as to whether the world responds to the categories of the plant scientists.

Confusedly. The leaves of a single tree
May differ among themselves more than they do
From other species, so you have to find,
All blandly says the book, "an average leaf."

Even from the very beginning of our encounter with the trees, there appears to be cracks in the expectation of one-to-one correspondence. The language recedes from certainty towards ambiguity: there "may" be differences between the tree in the book and the tree we encounter in the wild. As the speaker suggests, individuals even of the same species can show immense difference. James D. Mauseth states that "[n]o species is made up of absolutely identical individuals; therefore, numerous samples

must be collected to gather information about the variability of its features as well as its geographical and ecological range" (p. 427). Despite the inter- and intraspecies variety that make plant identification all the more challenging, the book "blandly" instructs us to find "an average leaf." Thus, this plays on the necessity for and the attempt at standardization in the plant sciences. In plant systematics this standardization is done by assigning what is called a "type specimen" for each species. This is "[a] single specimen that is the "absolute standard" for the species and its scientific name" (Mauseth G-20). The "International Code of Botanical Nomenclature" describes precisely the steps necessary for naming a new species:

> A valid name, one never previously used, must be declared and must be accompanied by a detailed description of the species in Latin and usually also in English, French, German, Spanish, or Russian. The name and description must be published in a widely circulated journal, a step that prevents many problems. The journal's editors send the description to at least two independent specialists to verify that it is a previously unknown species and that the name has never been used before. The description must also include the designation of a type specimen; this is a single preserved plant that truly carries the name. (Mauseth 431)

So, it can be seen that there is rigorous effort in naming, describing and representing a particular species within the field of plant sciences. However, this process of standardization appears "bland" and not at all helpful when it comes to the endeavours in identifying trees in the poem.

> Example, the catalpa in the book
>
> Sprays out its leaves in whorls of three
>
> Around the stem; the one in front of you
>
> But rarely does, or somewhat, or almost;

This stanza works to solidify and strengthen the doubt presented in the previous section. It demonstrates that the "chaos of experience" does not answer to catalogue and category as much as we had expected. The answer is not presented directly, but

rather we are made to encounter the confusion that arises from such failure. Language becomes slippery, with words like “but,” “rarely,” “or somewhat,” “or almost,” leaving momentary gaps for doubt.

On the other hand, the present binomial system of nomenclature requires that “[t]he scientific name of all species always has two words: The first is the genus name and the second is the species epithet; therefore, the species name is the genus + species epithet” (Mauseth 22). In order to correctly identify a plant we have to know both its genus name and its species epithet. However, the catalpa tree mentioned in the poem does not give us its binomial name. Catalpa is the genus name under which there are different species of catalpa trees such as *Catalpa bignonioides* (Southern Catalpa), *Catalpa speciosa* (Indian Bean) and *Catalpa ovata* (Chinese Catalpa) and many others. Therefore, it may be due to the fact that we actually have two different species of trees at hand, when comparing the example given in the book and the one we have in front of us. Moreover, “[i]n the scientific names of plants, the genus name is always capitalized but the species epithet is not” (Mauseth 4). However, the word catalpa we have in the poem is not capitalized. Therefore, the “catalpa” given here most likely refers to the “common name” of the tree, rather than its scientific name, which is a name that can range from different cultures and geographies, and is by no means a standard and reliable point of reference for plant identification. The confusion that we encounter in this stanza may not necessarily stem from the discrepancy between the plant description and the actual plant, but rather from a mistake in or the lack of necessary search criteria. The suggested frustration

intensifies in the next stanza as the speaker ironically addresses his own potential failure to identify the trees using the descriptions in the book:

> Maybe it's not catalpa? Dreadful doubt.
> It may be weeks before you see an elm
> Fanlike in form, a spruce that pyramids,
> A sweetgum spiring up in steeple shape.

Here again the speaker appears to be celebrating the ambiguity that arises, as if mocking the new learner's confusion: "dreadful doubt," and the tone again turns into a playful one, along with the alliteration "fanlike in form," "sweetgum" is "spiring up in steeple shape." The plasticity of the forms, the steeple shapes and the pyramids add a synesthetic complement to the visual, vocal and aural elements by adding volume to what can already be seen, and heard. The "sweetgum" tree adds an element of taste and texture, verbally implying the tree's sweet flavoured resin, though it is said to be slightly bitter, and its soft and sticky consistency.

> Still, *pedetemtim* as Lucretius says,
> Little by little, you do start to learn;
> And learn as well, maybe, what language does
> And how it does it, cutting across the world

So in the face of all the ambiguities and frustration we encounter in not being able to perfectly match the plants themselves with the language of the plants we have learned, "still," the speaker reassures, we are starting to "learn," *pedetemtim,* step by step. At this point we see another shift in the focus of the poem. The reflection on the act of *learning* the trees transforms into what now becomes a question on the nature of *language*. The focus shifts from the trees to language itself. It is not sufficient to simply learn the language of the trees or the trees themselves, but is also necessary

that one thinks about the role of language all throughout these processes.

The poem not only talks about how language separates, and with its categories "cuts across the world," but it also enacts this as the line runs on to the next stanza, not separated "at the joints." The previous stanza is disrupted just as it speaks about how language "cuts across the world,"

> Not always at the joints, competing with
> Experience while cooperating with
> Experience, and keeping an obstinate
> Intransigence, uncanny, of its own.

The speaker acknowledges both the restrictive and the transformative power of language in "competing" with experience while "cooperating" with experience. Gary Snyder, in "Language Goes Two Ways," suggests that "[i]t may be argued that what language does to our seeing of reality is restrictive, narrowing, limiting, and possibly *misleading*" (p. 174). However, he argues "rather than dismiss language and to vaguely speak of Unsayable Truths, we must turn right back to language" (p. 175). This is exactly what takes place at this point in this stanza. After noticing and pointing out the discrepancies, the insufficiencies of plant systematics in representing and describing plants, the speaker instead of dismissing it, by making language the central focus of the poem, encourages us to turn back to language. The speaker acknowledges that while language can be restrictive, "competing" with experience, it can also be enriching, "co-operating" with experience. The speaker helps us notice that this language of trees that we have learned is not perfectly applicable to "plants themselves" in nature, yet instead of pushing it aside, he brings it into focus by making the reader think about what language, both the language of systematics and language in general, does. Likewise, the same concern is addressed in botany as well.

In the same way that the poem turns back to language, plant systematics also turn back to its methods, acknowledging and striving to compensate when they fall short. As Mauseth explains, "[f]or taxonomic studies, a mosaic of evidence is available—some valid and useful, some *misleading*. Systematists attempt to look at as many features as possible on the assumption that misleading evidence will be outweighed by valid characters" (p. 417). Although simple observation of major parts, the sole method we see in the poem for plant identification, is still important, the speaker is aware that his own methods of observation are insufficient. Mauseth continues: "[c]urrently, taxonomists study virtually every aspect of plants using a wide variety of tools" that range from "scanning electron microscopy to study hairs, stomata, cuticle and waxes; light and transmission electron microscopy" and "now DNA can be examined directly and mutations can be identified, even if they do not cause any detectable change in phenotype" (Mauseth 417). The insufficient and partly, at times, misleading method we see in the poem in identifying trees, namely identifying plants via visible physical characteristics only, would normally be compensated by other methods used in taxonomy. In other words, studying a plant only in one aspect, like morphology, or using one of the methods Mauseth mentions, would understandably result in gaps of knowledge regarding that plant: gaps to be filled by other perspectives. These different methods offer a complementary relationship to each other, each shedding light on a different angle of the plant. Namely, they "co-operate" with each other in creating the experience of the plant. On the other hand, the poem offers an awareness of language itself as a resource for the lack of accuracy, or full correspondence between representation and actual experience. There is a tension between this language and experience, as the language of systematics resists experience "keeping an obstinate intransigence, uncanny, of its

own."

Snyder proposes that "[t]he way to see *with* language, to be free with it and to find it a vehicle of self-transcending insight, is to know mind and language both extremely well, and to play with their many possibilities without any special attachment. In doing this, a language yields up surprises and angles that amaze us and that can lead back to unmediated experience" (p. 175). So, one could say that after learning the "language of the trees," that is, learning terms and concepts of classification and identification well enough, so much so that one can play with them as the speaker does, one can see further with them, enrich one's field of vision, yet not become attached to or limited by them, while at the same time being able to see their problematic aspects. The speaker seems to be able to do this, offering questions and points for further consideration for the new learner. He first attempts to equip us with the "language of trees," then points out how it sometimes "cuts across" nature's own categories, and how it, in Snyder phrases, "goes two ways" since it not only "competes with experience" but also "cooperates with experience." One can immerse oneself in the concepts and terminology of systematics, and other areas of botany as much as one wants, however, one should also consider the significant questions such as those raised by Nemerov as to its nature and its function on perceiving the world. Such questions involve becoming aware of the strengths and weaknesses of this language in seeing and expressing nature as well as seeing how it functions in this experience.

The speaker offers us another question to consider, that is the notion of objectivity and accuracy:

Think finally about the secret will

Pretending obedience to Nature, but

Invidiously distinguishing everywhere,

Dividing up the world to conquer it,

This stanza points to the discrepancy between the aims and the methods of science. While it assumes "obedience" to nature, it "invidiously" categorizes, and "distinguishes everywhere" with an implicit aim to dominate rather than "obey" it or be attuned to it. In his propositions for a "new nature poetics" in his essay "Unnatural Writing," Snyder proposes "that it go further with science–into awareness of the problematic and contingent aspects of so-called objectivity" (p. 172). Here, "pretending obedience to Nature" may be seen as the "pretence" or aim for accuracy or "objectivity" in perceiving and representing nature in the sciences. Surprisingly, the "problematic and contingent aspect" is also acknowledged in plant classification and identification since the process is not objective but rather depends on subjective evaluation. Mauseth clarifies that "[d]eciding whether several species are closely related enough to be placed together in the same genus is difficult. No objective criteria exist; the decision is entirely subjective and is often the cause of great dispute" (Mauseth 414). In fact, he explains that there exists disagreement even at the level of kingdom/Plantae. That is, there exists disagreement in some cases even on the issue of what should be considered a plant or not:

> [a]lthough you might expect universal agreement at the level of kingdom, even the boundaries of the plant kingdom, kingdom Plantae, are disputed. Some believe that green algae should be included because they are almost identical biochemically to vascular plants. Others believe that, despite the biochemical similarity, green algae should be excluded because they are so different morphologically and anatomically (p. 415).

That is to say, there is no pretense at objectivity at this point but rather, only an attempt to find better and accepted means to come to an understanding of plants.

On the other hand, "obedience to Nature" may also mean maintaining a respectful and dignified treatment of nature. In which case, the act of "recklessly"

dividing, cutting, naming, mapping, may be seen as a colonizing move. Or simply the endeavors to learn tree identification and classification while actually wanting to learn the trees themselves may be presented as hypocritical. On the face of it, while one comes out of respect, the other one is bland disrespect to nature's own borders and divisions. Here the whole processes of "standardization" and labelling may be seen as an act of disrespect towards the individuality of the tree in question. However, although systematics is shown as a human attempt to "divide up the world to conquer it," it should be noted that the divisions in this system of classification are not "artificial," but are actually an attempt to understand already existing categories. In *Botany*, Mauseth explains that "[p]lant systematists still have the goals of searching for new species and using them to construct more accurate models of plant evolution. It is important to remember that the pattern of evolutionary diversification—the phylogeny—is a reality" (p. 414). Thus, systematics is not necessarily enforcing "human-made," abstract categories onto the plant world but is, rather, trying to understand and represent the patterns that exist within the evolutionary relationships between plants. The categories are "real," as Mauseth suggests, so this complicated, strictly ordered system of classification is not a human attempt to bring order to the "chaotic" natural world, but is rather, their effort to comprehend, the order inherent in the world. Therefore, as opposed to the notion that "[the] world is chaotic, but language organizes and civilizes it," Gary Snyder argues that "[t]he world and mind is orderly in its own fashion, and linguistic order reflects and condenses that order" (178-179). Likewise, we could say that the science of plant systematics, that is, the "language of the trees" we have learned, with its categories, its distinctions, with its endeavour to map the evolutionary lines, does not try to "organize and civilize" nature but rather "reflects" and "condenses" the order that

already exists in it. Therefore, contrary to the speaker's claim in the stanza, the language of trees does not in an "invidious" act to try to "conquer" the world with its divisions and categories, but in fact, tries to "condense" and "reflect" that order inherent in the world.

From the question of "objectivity" the final stanza now carries the poem into an inquiry on the subject of "knowledge" and what "learning" signifies:

> And think also how funny knowledge is:
> You may succeed in learning many trees
> And calling off their names as you go by,
> But their comprehensive silence stays the same.

One may individually learn how to identify catalpa, elm, spruce, sweetgum and many others, learn their Latin binomials, and learn how to take note of their features, the exact words to use when describing them, notice which kinds of flowers which kinds of fruits they have, their texture, the shape of their leaves… However, there is still more to the tree than the meticulously detailed description we have at hand. The "comprehensive silence stays the same" the speaker suggests. This may imply that we are trying to access a language with the wrong key, or the key we have is not enough on its own. Or simply that, in the face of the immensity of the knowledge that the "silence" of the tree encompasses, we have merely scratched the surface. From another perspective, one could also argue that learning how to identify individual species does not point to the nature of the trees as a collective. It may be that we need another branch of science, like plant ecology, or another form of knowledge of plants to shed light, or to understand the "comprehensive silence," which the field of plant systematics simply does not have as an objective, or the claim to accomplish. So, the miniscule knowledge we now have of trees should be

juxtaposed with and complemented by other types of knowledge regarding the trees.

Furthermore, the classification systems also have admitted insufficiencies within themselves in giving us the "comprehensive" picture:

> Our classification systems are hypotheses, models that attempt to map that evolution. Because our knowledge is incomplete and imperfect, the current classification systems are only approximations. Most are probably close approximations, and we do not expect major changes; however, we do expect numerous smaller changes to be made periodically for many years. (Mauseth 414)

One can understand that, as opposed to a strict claim for complete accuracy and objectivity, there is an awareness of problems with such concepts in the plant sciences. Thus representational ambiguity is not only a concern of Ecopoetry, but as we have seen, of science as well. Miriam Marty Clark comments on this uncertainty in "Between the wave and particle: Figuring Science in Howard Nemerov's Poems": "[i]f nature, in its flux and particularity, resists the philosopher and the poet it also resists the scientist…" (p. 39). Many of the questions we have in the poems, as those posed in the beginning, and many that come unvoiced, in both experiencing and expressing this experience in nature in our poems, appear to be relevant in the science of botany as well, questions such as those involving accuracy, the restrictive and empowering aspects of language, questions on the nature of knowledge and the extent to which it is essential to have "knowledge" about plants if we are to write about them... Likewise, plant sciences also posit questions of the same nature in order to experience, understand and represent plants. In this regard, one could argue that the concerns travel in the same direction. Miriam Marty Clark (1990) quotes James M. Kiehl on Nemerov's concern with the inadequacies of scientific thinking:

> One response by the sciences to such limitations is to come back upon themselves, to devote attention to their own modes of expression and perception. They are at least noticing that their own modes are analogic and metaphoric and consequently they are learning the same sort of diffidence poets acquire as 'negative capability'" (239) (p. 47).

Although, by no means a sort of “diffidence,” Keats’ negative capability comes in as a concept that connects the scientist and the poet, though one could argue such distinction itself is already the problem. In “Learning the Trees” we have the science of botany and poetry coming together and reflecting on the possibilities and limits inherent in each “language” in “hearing” and “speaking” trees. In the face of limitations, the same way that science turns back to itself, the poem turns back to language. And where language comes to its furthest point, that is, when the language of trees fails to provide an extensive understanding of the trees, the rest becomes an open space for other voices to come into play. This is where negative capability, that is, being “capable of being in uncertainties, mysteries, doubts, without any irritable reaching after fact and reason” becomes a natural necessity and also the answer to the questions raised. Nemerov performs this in the very language of the poem as well. The poem begins with the rigid conditional ordering that before we can go outside and learn the trees, we “have to” stay inside and learn the language of the trees. This stern, imperative voice gradually softens, to finally, in the last stanza open up space for uncertainty and possibility. The poem’s “have to” becomes an open ending, pointing to the fact that there is simply more to hear. As Clark (1990) points out:

> At the heart of Nemerov's interest in science—its aims, its data, its metaphors—is just such a philosophical examination of its presuppositions; beneath the irony and the inquiry of the science poems, there is just such a critique of its foundation, whereby—its metaphoric nature revealed, its paradoxes and mysteries acknowledged— science does not "degenerate" but becomes richly generative. (p. 49).

Likewise, science, in the poem, helps us learn only one of the languages of the trees. Nemerov’s poem encourages us to learn and become comfortable with this language, then directs us to know and question the limits of this language, in an act both

humbling and charged with mystery and wonder, pointing the way, as Gary Snyder also proposes, to go further with science.

Since knowledge about plants is not limited to systematics, nor is it limited to other branches of plant sciences, the language of plants is not limited to the voice of systematics only but comes in all sorts of exuberantly diverse forms and dialects. In that sense, the poem can be seen as an introduction to, and an invitation for other voices or silences to be called in. In other words, these "gaps" and discrepancies language entails in the naming and representation of nature is not necessarily a loss or a "defect" but are simply spaces to be filled by other languages. In its endeavour to examine the representing or, enacting of nature and, specifically, the experience with plants, the ecopoetic qualities of Nemerov's poem "Learning the Trees" cross-pollinate with other languages to form what, Robin Wall Kimmerer, in *Braiding Sweetgrass* suggests is "not an intellectual "monoculture" of science, but *a* polyculture of complementary knowledges" (p. 139).

CHAPTER 3

"THE UGLY OF THE UNIVERSE": WEEDS IN THEODORE ROETHKE'S POETRY

In his book *A Place in Space,* Gary Snyder (2008) suggests that New Nature Writing should tend to the dark side of nature. The depth ecology he advocates includes creatures "nocturnal, anaerobic, cannibalistic, microscopic, digestive, fermentative: cooking away in the warm dark," and that the new nature writing is to explore not only the world of diurnal, "large interesting vertebrates but the world of nature on the decay side" (p. 169). Snyder calls for "a poetics that will help "acknowledge the autonomy and integrity of the nonhuman part of the world, an "Other" that we are barely beginning to be able to know" (p. 168). In other words, Snyder proposes a poetry that will integrate the outcasts of nature that we have oftentimes overlooked, ignored, or whose existence we have yet to notice. This means a nature writing that will go beyond nature on the surface we see, experience and empathize with, to a more interconnected nature poetics that incorporates all the nodes and synapses of this larger network we are a part of. Theodore Roethke's poetry portrays Gary Snyder's depth ecology in these crucial aspects. Exploring the vegetal other, as well as the ugly, the undesired, the misfits, Roethke's poetry does this, not only in terms of subject matter, which comprises a considerable portion of its ecopoetic quality, but also performs it in the very language itself too. Roethke, especially in his sequence which has come to be known as his Greenhouse Poems, goes into the cracks and crevices of being, entangled with vegetal life. Although his other poems are also of great value in their conspicuous entanglement with the vegetal other, two poems will be the main focus here: "Long Live the Weeds," which was published in

his collection *Open House* in 1941, and "Weed Puller," published in the first section of *The Lost Son and Other Poems* in 1948. In these two poems, Roethke brings weeds out of our peripheral vision and alters the way we see them. The poems actively engage the reader in the life of weeds and in doing so tease the ethical limits of empathy. The two poems follow Snyder's depth ecology in that they bring the members of the vegetal other, and explore the various ways poetry can contribute to and transform the discussion of weeds.

A contextualization of weeds may prove helpful in approaching the poems. One should note that there are many factors that determine what is considered a weed, ranging from toxicity, wildness, usefulness to humans, behaviour and even "ugliness." Therefore, there are also many accompanying definitions which Richard Mabey (2002) explains in detail in his book *Weeds: In Defence of Nature's Most Unwanted Plants*.[3] However, in its simplest terms, Thomas J. Monaco et. Al. (2002), in *Weed Science: Principles and Practices,* define the weed as "a plant growing where it is not desired, or a plant out of place—some plant that, according to human criteria, is undesirable" (p. 3). In other words, "[t]hey are plants which sabotage human plans" since "[t]hey rob crops of nourishment, ruin the exquisite visions of garden designers, break our codes of appropriate behaviour, make unpleasant and impenetrable hiding places for urban ne'er-do-wells" (Mabey, 2002, p. 11). Hence, if in Michael Marder's words, plants populate the "margin of the margins," one could argue that weeds stand out as the outcasts of the vegetal world, not merely in a figurative sense but in the strictest sense as the very definition itself designates them as unwanted.

The vilification of weeds does not always dominate the rhetoric in the

[3] See Richard Mabey (2012) chapter 1, "Thoroughwort" (pp.1-38).

sciences, however. Phytoremediation is one of the instances in which we see the role of some of these plants shift radically. Ajay Singh and Owen P. Ward (2004) explain in *Soil Biology: Applied Bioremediation and Phytoremediation* that

Phytoremediation is a method which uses various plants to extract, contain, immobilize or degrade contaminants from soil and water (p. 7)[4]. In other words, it is a method which brings in plants to rehabilitate or "decontaminate" soil and water that is loaded with heavy metals and other toxic organic or inorganic chemicals. Thus, while the more popular approach vilifies weeds, phytoremediation is one of the instances in which these phyto-villains are called in to the rescue. The weeds now become superheroes, or phyto-heroes, of the lands that have often been irreversibly damaged.[5] From being the unabashed, menacing creatures that can grow in plenty, even from the smallest handful of soil and dust, they become plants whose

[4] In *Soil Biology: Applied Bioremediation and Phytoremediation* Ajay Singh and Owen P. Ward explain that "[s]ome plants can remove contaminants from soil by direct uptake, followed by subsequent transformation, transport and accumulation in a nonphytotoxic form. The diverse approaches in phytoremediation include phytodegradation, phytoextraction, phytostabilization, phytovolatilization and rhizofiltration" (p. 7). In other words, some plants have properties, such as hyper-accumulation, that allow them to absorb, store or transform chemicals, such as heavy metals which are otherwise toxic to other creatures, in their leaves, roots or stem. Phytoremediation is a technique that selects plants that have qualities that help clear the soil or water from toxic matter and in some cases enable the land to harbour life again.

[5] Many of the plants commonly used in Phytoremediation such as alfalfa, willow, *Salix nigra*, and canola are plants that are not currently considered weeds. Phytoremediation utilizes the heavy-metal accumulating (hyper-accumulation) properties of such plants, so that they uptake and store toxic organic or non-organic matter within their leaves, stem or roots. Although many of the plants suitable for phytoremediation include plants that are in fact desired for food, for fuel or fodder, there are also plants such as Parrot feather, which has been used for phytoremediation of polluted waters although it is considered a noxious weed and even prohibited in some states. Likewise, *Phragmites australis*, the common reed, is considered an invasive species and is even banned in some parts of the United States. See: "*Phragmites australis* (common reed) Plant Profile- Legal Status." United States Department of Agriculture, Natural Resources Conservation Services. Web. 10 Dec. 2018

However, the common reed can also be used in the phytoremediation of water from its pollutants. For further information, see: Peter Schrodinger, et al. "Use of *Phragmites australis* for Phytoremediation of Organic Compounds in Municipal Waste Water Treatment Plants," Phytoremediation: The Green Salvation of the World, Edited by J.P. Navarro-Aviñó Research Signpost, 2008, pp. 231-242.

For a study of four types of weeds: *Portulaca oleracea* (Common purslane), *Solanum nigrum* (Black nightshade), *Abutilon theophrasti* (Velvetleaf) and *Taraxacum officinale* (Dandelion) in the highly toxic Cadmium's phytoremediation see: Hossein Hammami et. Al. "Weeds Ability to Phytoremediate Cadmium-contaminated Soil,"International Journal of Phytoremediation, vol 18, no 1, 2016, pp. 48-53.

flourishing is this time much anticipated and carefully monitored. In other words, this time the weed, the "undesired" plant becomes a plant that is carefully monitored and tended for. Weeds therefore hold an ambivalent status where the agreeable can turn disagreeable even aggressive and vice versa. For instance, many plant species such as the Multiflora rose, Lupine or Lantana are much cherished ornamental plants in many parts of the world, while in various parts of the world they appear as invasive or noxious weeds, and in some countries they are blacklisted and even banned for threatening native flora.[6] When weeds act as saving agents and are portrayed as such, this time, for us they become organisms responding in ways which complement human purposes of restoring nature's balance. In other words, they become the restorers of what we have disrupted, or one of our options to "clear up the mess we have made." One could argue that phytoremediation and Ecopoetry have similarities in terms of their aim and in the ways they operate.

The title of Theodore Roethke's poem, "Long Live The Weeds" is a salute to Gerard Manley Hopkins' "Inversnaid," taken from the poem's last stanza*:*

> What would the world be, once bereft
>
> Of wet and of wildness? Let them be left,
>
> O let them be left, wildness and wet;
>
> Long live the weeds and the wilderness yet.

The admiration and reverence to the damp, lush and rustic wilderness also accompanies a reverence towards weeds as the indispensable inhabitants of the wild. Gerard Manley Hopkins does not necessarily construct his poem around weeds, but rather highlights their essentiality to the wild, hence binding them with all the other

[6] For further information see: Pamela L. S. Pavek et. Al. "Roses of the Inland Pacific Northwest, Native and Invasive Species Identification, Biology and Control: Plant Materials Technical Note No. 21," *USDA-Natural Resources Conservation Service-Spokane Washington,* 2013.

creatures of the same geography: the “wiry heathpacks, flitches of fern and beadbonny ash,” the streams, and all that go along with it. The poem is rhythmic and clearly intended to be read aloud. Playful in sound, its tone is celebratory, incorporating a kind of hope mixed in with the speaker’s bittersweet wish for the land to be acknowledged and preserved for its raw coming togetherness of all the creatures ranging from weeds, to ash trees, to the multifarious shapes, the “turns and twindles” of waters. Weeds hence make one of the irreplaceable creatures of the ecosystem, though they do not necessarily hold the only main star role in the poem. Roethke’s “Long Live the Weeds” diverges firstly from Hopkins’ poem in that Roethke brings in the last line of the stanza, to be the very first line that we encounter. Namely, weeds make it to the top of the poem and take the leading role, over rocks and others that constitute wildness. However, contrary to Hopkins’ poem, weeds are not revered as the indispensable components of the wilderness, but rather they appear as creatures that the current reigning king “lets live” in his realm:

Long live the weeds that overwhelm
My narrow vegetable realm!
The bitter rock, the barren soil
That force the son of man to toil;
All things unholy, marred by curse,
The ugly of the universe.
The rough, the wicked, and the wild
That keep the spirit undefiled.
With these I match my little wit
And earn the right to stand or sit,

Hope, love, create, or drink and die:

These shape the creature that is I.

As much as Roethke's poem differs in its essence, it resonates with "Inversnaid" in terms of its tone. The poem mimics Hopkins' playfulness and musicality, with its musical "aa, bb, cc…" rhyming couplets. However, Roethke spares the rustic, colloquial and at times improvised vocabulary of Hopkins. One of the most visible differences appear to be that in Hopkins's poem, the reader can feel the speaker in the very landscape in which he is walking. The impression is that the speaker most likely has walked the place many times before, that he is on familiar grounds, connected to the plants, the heather, the ferns, the ash that sits over the river; he is literally rooted in the place. We can almost imagine the speaker roaming the land, as he speaks from the place and for the place whereas, Roethke's persona remains relatively detached from the plants he talks about and speaks about the weeds from an elevated point of view. He is talking about weeds but there are no weeds physically present in the scene. One could see that Roethke's poem rather hinges on abstraction in that the weeds are there merely as a concept, and not as individual entities: they attend not with their concrete biological presence, but more as a theory or concept of weeds. Moreover, as opposed to Hopkins' poem, the weeds comprise not an essential part of the ecosystem, but one whose presence the speaker lets slip by. They slip into a role that is instrumental, rather than fundamental, one that grows around the human experience.

This centrality can be traced in the language throughout the poem: "My narrow vegetable realm," "son of man," "spirit," "I," "my little wit," "creature that is 'I'" all point back to the human individual. Hence, weeds almost serve as a foil, an instrument to aid mankind in his journey of "selfhood" in becoming the elevated "I."

In other words, Roethke lists, along with the weeds, all the rough edges of human existence on earth, and suggests that these are all essential in the person's growth, shaping his identity. Whereas, in Hopkins they are a part of and essential to Nature, with their very own rightful existence: in "Inversnaid" weeds are brought into the poem for their intrinsic value, and not simply for their role in Man's character development. Nevertheless, one should note that however detached the poem may be physically, and however instrumental weeds may be in aiding "Man" in his journey of self-discovery, the idea itself is of significance. Hence, much of the poem's ecopoetic character comes from its approach to weeds because Roethke inverts the cultural perception of weeds. In other words, he picks up the Biblical "thorns and thistles," the curse of Mankind, and rejoices in it. The repugnant, the curse, now becomes the cherished. He celebrates weeds, both by putting them on a kind of pedestal, announcing their right of succession, to reign over his "narrow vegetable realm," possibly over which the speaker once ruled. However, this appears to be a humble kingdom in its nature, almost with a tint of bathos, as "my narrow vegetable realm" draws to the mind's eye not an extensive land but a small patch of earth which any small-scale gardener could be proud of. Or it may simply be that the favour of this self-proclaimed king does not mean much for the weeds. This reminds one of Louise Glück's (1992) poem "Witchgrass," in which the witchgrass, a weed that has challenged gardeners and farmers for centuries, directly announces its dominion itself, as opposed to being handed down the throne as a formal crowning. Regardless of the human persona's stance, witchgrass asserts domination over the land:

> I don't need your praise
> to survive. I was here first,

before you were here, before

you ever planted a garden.

And I'll be here when only the sun and moon

are left, and the sea, and the wide field.

I will constitute the field.

As in Glück's "Witchgrass," in "Long Live the Weeds," there is a similar dynamic between the weeds and the speaker in which the weeds reign superior. However, while Glück's depiction of the witchgrass is direct and assertive, the privileging is subtler in Roethke's poem.

On the other hand, Roethke elevating the weeds on a pedestal by no means involves an idealization of weeds. Quite the contrary, Roethke lets them keep their "weediness," their otherness, while ascending the throne. Along with these plants, Roethke also lets "the bitter rock," "the barren soil," all "the rough," "the wicked," "the wild," "the unholy," the accursed and all the ugly and marginalized of the universe in as well. Therefore, this becomes an acceptance and a cherishing of the "lowly" part of creation that is often seen as toil to human agriculture. On the other hand, as previously mentioned, while there is a reverence to the non-human other, one can also sense a covert egotism in the poem. Although weeds take the stage, and the speaker gives the impression of stepping aside for the new monarch, the "I" runs throughout the poem. Moreover, there are no real traces of the actual weeds themselves; therefore, the crowning of weeds appears to take place in absentia. However, this does not necessarily mean that "Long Live the Weeds" should be pushed aside for a flaw in its ecopoetic value. Robert Kerr, whom Scott Knickerbucker (2012) quotes in *Ecopoetics: The Language of Nature, The Nature of Language*, proposes that although ecocritics value the latter more, anthropocentrism

and ecocentrism are not necessarily opposites, and that the two coexist: “they both open up opportunities to redefine ourselves as beings on the earth, along with countless (but dwindling) other species and life-forms…” (p. 8). Whether there is a balance, a coexistence, or a symbiotic relationship between the two is difficult to determine. Yet, in an environment that demarcates weeds from the vegetal beings that are desired and granted the right to live, simply making the weeds its subject matter, and assigning the poem’s title to praise them is itself a radical act. As much as we see a taint of self-righteousness mixed within the poem’s ecocentrism, the fresh perception of weeds outweighs its subtle anthropocentric aspect. Hence, in line with Knickerbucker’s statement, weeds help Roethke’s speaker redefine himself in relation to the universe. The poem is rather transformational, almost a perceptional alchemy, in that it moulds the curse into a blessing. It transforms what had been placed on earth as a punishment, a burden to man since the fall, into something that renders him a part of his identity. In the same way phytoremediation transforms toxic chemicals in the environment into non-toxic form, the poem transforms the toxic metaphors and notions ingrained in the cultural fabric, where the weeds transform from the vagabonds to rightful heirs of the throne. Therefore, the poem performs a mental or cultural phytoremediation, and the poem’s metaphors and sounds become the agents essential to the process of phytoremediation.

“Weed Puller,” on the other hand, steers towards a more ecologically conscious ground, and engages more in what Knickerbucker calls “sensuous poesis.” The first line directly places the reader “under the concrete benches.” We know from the very beginning that this is rather unusual territory, or, rather, an unusual point of view from a very usual place. Like the underside of a classroom desk, oftentimes it is where no one would look or want to touch or come into contact with under any

circumstance. The concrete benches also suggest that this may be a public space such as a park or public garden. Hence, the poem takes us out in a public garden, yet in a very private sphere of its own. To begin action, it sets the environment to a mini-habitat of weeds and their underground companions.

Richard Mabey (2002) refers to Albrecht Dürer's painting of weeds, "Large Piece of Turf," as "painting's discovery of ecology" (p. 17). The painting itself features a small patch of ordinary land with wild plants, ranging from dandelions, different types of grass, to broadleaf plantain. Though some of these can be foraged for food and their medicinal properties, they are mostly considered weeds. The painting privileges no single plant as its main focus. And the point of view that the viewer is made to take is a ground-level, eye-view of the scene. Namely, the viewer experiences the subject on the same level with plants, and not from an elevated point of view. The composition is also significant, as it appears organic. Though a plant-ecologist, or a botanist would be a better judge, to the attentive eye who comes across similar such scenes every day, the painting looks like any normal scene of plant habitat one would see near a sidewalk. Dürer himself, most likely sat down, and observed these plants, their relationship with each other and their companion species that are often seen growing close together, for a considerable amount of time, so much so that the painting looks real, and not like a clumsily constructed scene. Along with himself, Dürer makes the onlooker take part in the experience of kneeling down and looking at the green and brown dominated moment of life with an intention to actually see the details of this green area that our eyes oftentimes crudely brush over every day. The painting makes the viewer see the different nuances of how light shines on a single blade of grass. How colour reflects differently on its sheath node and the slight bends and curves at the tips of its leaves, and what a dandelion head

does after its full bloom, right before going into seed, forming a globe of ripe seeds, each fully equipped with parachutes for wind-dispersal. In making us kneel down as Dürer himself does, the painting enacts Dürer's experience of weeds. We become a part of the performance, seeing the weeds, partially, as he himself does.

In the same manner, Roethke's "Weed Puller" makes us crawl on all fours, seeing the plants close to the earth, with damp soil stuck on the knees of our trousers, hacking and pulling weeds as he does. This materiality brings one back to the discussion of sensuous poesis. As Scott Knickerbucker (2012) suggests, "[p]oets who practice sensuous poesis in the manner of Dickinson and Hopkins use formal devises to enact, rather than merely represent, the immediate, embodied experience of nonhuman nature" (p. 17). One can argue that "Weed Puller" is a performance, an enactment of human entanglement with weeds, if not a new "discovery" of ecology like Dürer's painting. Roethke's poem enacts, or makes us perform, not only on a semantic level but also aurally as well. With its sounds, a combination of flowing, fluid sounds, of "hairy," "lewd," "…tails," "coiled," "lovely," "inviolate," slipperiness is performed on the ear and in the mouth, physically in the act of vocalization. Moreover, the labour and the toil that goes into weed-pulling is also enacted in the lines: the contrasting "pulling and plucking" is stacked against an otherwise slimy, damp and liquid vocabulary. The reader thus participates in the act of mental "weeding," but also performs it in the mouth and we hear it as we read aloud. "Hacking," "digging," "grubs and snails" and "sharp sticks" not only become aurally contrastive, but semantically as well, as the mind processes not only the very concreteness but also the texture: the soft, leathery, slimy-looking skin of grubs and snails are up against piercing "sharp sticks." One can imagine the two physically against each other, yet in some kind of harmony, a scene not unfamiliar especially

after rain. Hence, the slipperiness, the sluggish, slowness, of life unfolding contrasts the weed puller's swift, somehow awkward and inelegant movements. Yet these contrastive gestures are likewise part of a larger harmonious flow.

The late Poet Laureate, Stanley Kunitz (2007), a passionate gardener and an influence on and a close companion of Roethke, states in *The Wild Braid: A Poet Reflects on a Century in the Garden*, his collaborative book with Genine Lentine, and Marnie Crawford Samuelson, that "[t]he colours of flowers have different vibrations, akin to what Rimbaud spoke of when he referred to colors of vowels" (p. 71). In their somewhat synesthetic, and associative character, the pastel flowers, seem to have benign and pleasant vibrations (pink, lovely and inviolate).[7] What vibration might weeds have one may be moved to ask. Or what colour the vowels in the poem emit as they sweep over the damp landscape under the bench. Whatever their association may be, the weeds resonate stronger than their pastel-coloured, pastel-voiced, pastel-represented companions in the poem. In other words, unlike the blossoms, the background-green of the weeds this time does not blend in with the pleasant background; it stands bold. One could say that it is this sensuousness, the vivacity of the community of weeds and their under-the-bench companions that make Roethke's "Weed Puller" strongly ecopoetic and rooted in the earth itself. The act of weeding and the portrayal of these unwanted plants is nowhere close to abstraction. In fact, it is so tactile and grounded in the earth and plants that it makes the reader perform the act of weeding. Furthermore, the weeds have character depth, they claim a presence;

[7] "[L]ovely and inviolate," as they may be, the pale pink ornamental plants, the rose, the lilies and cyclamen are lovely and inviolate only for the time being and currently for that particular geography. As previously mentioned, many of the invasive plant species that threaten native flora are often comprised of introduced ornamentals that were brought especially for their aesthetic offerings and escaped from gardens. One should keep this in mind while reading Roethke's "Weed Puller". The lovely and inviolate flowers of Roethke may become the "weeds," the unruly escapees of another poem in the future.

unlike stock characters, they possess dimension. Although for a seemingly short time, weeds are given dominion within that realm at which the weed-puller peeks, unlike the blossoms of "lilies, pale pink cyclamens and roses" above, which remain within the limits of a few clichéd adjectives, like the dead floral metaphors adorning sixteenth-century love poems. In other words, cyclamen, lilies, pale roses are not portrayed with substance, they lack dimension. Even though the speaker praises them, he treats them no differently than stock characters and only allows them a place on the stage, with no substantial line to speak, letting them appear only for a brief moment as pretty props. As much as the weeds may appear as the mischievous villains, they clearly take the leading role. In this sense, another perceptional alchemy takes place as the foci shifts from the blossoms in the garden, where one would otherwise have rested his or her gaze, to the under-the-bench slums and its inhabitants. Therefore, the poem does not let the reader simply sit on the bench and look at the flowers and passer's-by: we adopt a new perspective and look underneath. This enlarges our perception of the garden as a place, and as a living entity, to include under-the-bench and its creatures. The poem transforms the passive gaze into an active seeing by opening a window for us to see and actively engage in the dynamics of the garden. This time the remediation does not consist of a transformation of the toxic to non-toxic, but rather, of an adjustment in the eye-sight and thought-sight. One could argue that an indirect remediation takes place, differing from "Long Live the Weeds." This time the toxic ground does not hold the negative-associations and connotations attached to weeds. Rather, toxicity comes from indifference. One could therefore argue that Roethke's "Weed Puller," remediates, not through the act of weeding, an act which in itself may be considered questionable, but by utilizing this act to directly or indirectly reconnect with weeds.

Through the weed puller, the staff, the public touches, sees and comes into direct contact with the vegetal pariah.

Another question that arises is whether the weed-puller feels any empathy towards the weeds, as Roethke's (1966) moss-gatherer does in his poem when he suggests that he feels he has disrespected or dishonoured a larger order when he digs out clumps of moss from the ground.

> Disturbed some rhythm, old and of vast importance,
> By pulling off flesh from the living planet;
> As if I had committed, against the whole scheme of life, a desecration
> (p. 40)

Unlike in "Moss-gathering" we do not openly sense any feeling of remorse towards the act of pulling weeds. Instead, it seems as if the weed puller has come to the acceptance of weeds and the act of "weeding" itself, as part of the scheme of life, and not something against it. Therefore, Roethke is not openly calling for empathy, but rather, rewiring our minds to perceive weeds as the sophisticated, profoundly adaptable, and in depth characters of a vastly complex and interconnected system. As Knickerbocker (2012) quoting Neil Evernden states, "[e]nvironmentalism without aesthetics is merely regional planning" (p. 3). Thus, although its subject matter is weeding, what Roethke is doing with his "Weed Puller" is not mere regional planning; it is not lawn care. What he is weaving in the background tends more towards metaphor making, thought weaving, than weed pulling. Therefore, like the weeds themselves, we do not know how many hundred seeds we have unknowingly distributed. How many have clung on our trousers and clothes, temporarily nestled in our hair, as we roll up our sleeves with the weed puller, hacking, pulling, going about our business. How many dormant seeds lay waiting for their turn to thrive where we

"clean" we do not know. How many dandelion heads we brush up against causing mini explosions of seeds that get carried away with the wind; how many seeds we are carrying under our shoes; which roots we have half-plucked off will come back as thrice as many? Like the weeds themselves, we cannot know what Roethke's metaphors and literary devices have planted in our minds. Knickerbocker (2012), drawing from George Lakoff and Mark Johnson's *Metaphors We Live By*, explains that "metaphor structures the very way we think" and "shapes our ordinary conceptual system" (p. 5). While we do not know the extent to which the "Weed Puller" has altered our experience or the way we think about weeds, yet what we do know for sure is that for a moment it has brought us closer to them. It has entangled us with them: if nothing else, it has made us disturb the land, under which conditions again the weeds live and thrive. Then, one could argue, just as language goes two ways, as Snyder proposes, the act of "weeding" also goes two ways; both a plucking and a replanting, a distributing, and a contributing to the living conditions, an opportunity for fierce adaptation, which enhances the chances of survival of the weeds. Sometimes pulling out a plant, for example, a weed like the dandelion, the end only signals a thousand new beginnings. Shara Lessley's (2013) poem "Tooth of the Lion" likewise reiterates this distribution:

> the dandelion's core dispersed to places unimagined. Chorus
> of a hundred directions. Each sliver
> a possibility somewhere anchoring itself in dirt (p. 381)

The end, or the beginning, for the dandelion is unpredictable, and by no means does it promise certainty. This, however, opens up space for endless possibility. In the same way every individual seed of the dandelion is a possibility to travel and re-animate life in distant territories, Roethke's metaphors, his literary devices, and his

sounds, the colours, in Kunitz' words, and the vibrations are each a possibility somewhere, anchoring themselves in human minds.

Kunitz (2007) suggests that "the garden communicates what it shows to you, but you also contribute to the garden some of what you are seeking in terms of your own life, your own state of being" (p. 73). Namely, the garden is "giving back," or communicating what Roethke is communicating "on all fours." Plants almost become animalistic. Though as much as it seems as if the verbs convey a one-sided act or relationship, "hacking, pulling, yanking," the garden, the plants, the weeds and all the organisms that they are entangled with are also responding to this act and vice versa. They are in different ways adapting, signalling to each other via chemical volatiles, changing their ways for survival, and constantly re-writing their narrative.[8] Therefore, there is another "poem" being written underground, on a lower plane, another garden planning. Or one could say, there is an extension of the speaker's poem, or a response to, and a conversation with it as stanzas spill out and into each other like the co-mingling of plant action: the vegetal and the animal; "the lewd monkey tails," and the poet on all fours; the soft, and the hard and sharp; death and life ("alive in a slippery grave") spill into each other. It is more of an entanglement, a co-writing, a dialogue, between the weeds, the soil, the weed puller and the organisms, below and above ground. Ecopoetry resembles phytoremediation in this sense as well. They resemble each other significantly in the way they operate. In the same way the poem is a collaborative writing, phytoremediation is also a collaborative writing between the researchers, the plant, the soil, fungi, bacteria, and other microorganisms, the contaminants and chemicals that are exchanged. One

[8] For more detailed information and scientific context on plant inter- and intra-species interactions, and on some of the remarkably sophisticated communication strategies of plants and how they perceive the world, see Daniel Chamovitz, *What a Plant Knows: a Field Guide to the Senses*. Scientific American/Farrar, Straus and Giroux, 2017.

could argue that in the same way bioremediation, specifically phyto-remediation, remediates the land, Ecopoetry could restore our relationship with the land, and hence remediate the land itself. Ecopoetry can be considered a sort of bioremediation whose collaborators and components range from the poet, the reader, and listener; the word and sound and thought, and with its content, the organisms to which it touches. Therefore, Roethke's poems could be phytoremediating, or "word and sound and thought remediating," by weaving into a toxicated, polluted landscape of thought, of language, seeds of a more balanced and healthier ecology.

According to Kunitz (2007) "[s]o much of the power of a poem is in what it doesn't say as much as what it does say. As when a flower is preparing to bloom, or after it has bloomed, when it is suspending its strengths and its potency and is at rest– or seems to be; its mission to flower and to produce seeds have been fulfilled" (p. 77). Then, the question arises: what does the poem not say? The poem omits the seed's preparations to germinate, to flower as soon as possible, to run to seed, the unseen strategies at play above and below ground, the interactions going on behind the scenes of those "lewd monkeytails." Yet these are all somehow present in the narrative. In the same way the body of weeds are not the full blossom, not the "height" of "weediness" for the weed (the before and after are often as critical points in their life cycle), the poem is also not the "full-blossom" of the persona's act of gardening. In other words, the tension is also not just that of the "blossoming" of the current weeds, it also bears the weight, and tension of the coming generation of weeds and their unseen pacts. The inevitable continuation of weeds weighs in the psyche of the gardener, or the weed-puller: as the title also suggests, "weed puller" is a state of being rather than a temporary task. It is an ongoing job that does not halt, it becomes something that defines the persona. He is simply a weed-puller, a person

who pulls weeds, and nothing else do we know of him or her. Furthermore, Kunitz proposes that "[i]n a sense, all creativity is a process of giving meaning to what is on a universal scale meaningless. The plant and the poet and the gardener collect these disparate, disorganized raindrops, sun rays, passing birds, and make something formal" (p. 102). In other words, the plant, the gardener and the poet are all form makers, poets and creators in the sense of the Greek "Poetes," whose creative processes involve, and come to include each other. Therefore, the garden becomes a place where the form-making aspirations of these three intersect and at times contradict. It becomes a collaborative poem.

If one is to step back and look at both poems, one could see that thematically, "Long Live the Weeds" brings a new, and much needed, approach to a degraded and literally demonized group of plants.[9] However, the poem's devices lack an intrinsic quality that the "Weed Puller" successfully enacts and that appears to be the extent of its rootedness in the physical world, its engagement with the weeds themselves. In his essay "The Vegetal Radicalism of Theodore Roethke," Kenneth Burke (1950) argues that "…you will rarely find in [Roethke's] verse a noun ending in "-ness" or "-ity." He goes as far as is humanly possible in quest of a speech wholly devoid of abstraction" (p. 73). Considering Burke's proposal, "Long Live the Weeds" appears to be one of those rare cases then. As much as "Weed Puller" is concretely physical, sweaty and literally down to earth, and physically and intellectually engages the reader with weeds and the act of weeding, "Long Live the Weeds," on the other hand

[9] See Richard Mabey (2012) chapter 4, page 71, for an example list of vernacular names used in the medieval period associated with the devil. Some of the multitudinous names include Devil's net, Devil's berry, Devil's blanket etc. Although Mabey suggests that these names do not necessarily connote evil, or align the plants with the Devil himself, but rather suggest menace and refers to them as respectful terms of joshing, as in "that little devil," yet one could argue that they still hint at the negative associations attached to the plants.

remains an abstraction of the weeds, so much so that it appears to be more about the "concept of weeds" in relation to human identity, rather than the weeds themselves. "These are what shape the creature that is I." "Long Live the Weeds" is more of a meditation, or thought, on the meaning of weeds, while "Weed Puller" makes one go through the labour, the feeling, and all the processes of the actual transformation that shapes the individual. It is therefore literally more in touch with the plants themselves and offers a virtual first-hand experience of weeds rather than a detached commentary on them. Therefore, although it features an act of weeding, an attempt to control or eradicate weeds, "Weed Puller" seems to be ecopoetically stronger, its roots holding deeper into the earth, gripping, the soil, like the weeds themselves. Moreover, we do not know which strategies "Weed Puller" will perform out in the field.

Society's understanding of weeds plays a critical role in the treatment and survival of these plants. In *Weed Science: Principles and Practices* Thomas J. Monaco et. Al (2002) explain that,

> [t]he greatest challenge is to develop control techniques that are in concert with sound ecological and environmental principles. These methods must also be environmentally and economically sustainable, must allow the production of a safe food supply, and must be acceptable by society. Society will dictate what agricultural practices are acceptable, and the weed science community should strive to develop better practices. These challenges will necessitate an improved scientific knowledge of weeds, their interaction with the environment, and their direct response to our imposed control tactics. (p. 592)

In other words, society's understanding of and approach to weeds will dictate the agricultural practices developed and offered. In an industry run highly by economic motives, society's impact is undeniable. So what could poetry do here? What tangible difference could these poems make? Why is it of any significance? Although Knickerbucker (2012) suggests that the outcomes are "immeasurable," he

proposes that “[m]etaphor is the very way we think” and that “poetry foregrounds how we think and speak all the time” (p. 5). Therefore, by speaking about the weeds as challenge, or as part of human life, and most importantly, as the complex beings that they are, like bioremediation we change or remediate our thought patterns, the way we perceive and think about weeds. In turn our behaviour, and possibly the industries that pay much attention to society’s demands, may change. This involves an alteration of present attitudes. Curiosity and informed, complex thoughts on weeds are essential to the problem of plant blindness and are necessary in directing people and industries to opt for more ecologically aware and respectful agricultural practices.

CHAPTER 4

EXPLORING THE FUNGAL OTHER IN GARY SNYDER, MARY OLIVER AND MARVIN BELL'S POETRY

Mushrooms have for long fascinated poets, writers and artists alike. While some are intrigued by their appearance, some are interested in their psychoactive properties, others in their growth habits, whereas some simply enjoy their distinct taste. Some of these interests burgeon as common patterns and metaphors in poetry that involve mushrooms in their subject matter. However, like the mushrooms themselves, the poems also show great diversity both in terms of their approach, the language and metaphors they use. Among many other poems entangled with mushrooms, Gary Snyder's "The Wild Mushroom," Mary Oliver's "Mushrooms" and Marvin Bell's "The Book of the Dead Man (Fungi)" will be the three poems in focus here. While these poems accentuate features of fungi that have commonly intrigued people for centuries, they also demonstrate the diversity of approaches to mushrooms. In this way, all three poems engage in what Donna Haraway (2016), in *Staying with the Trouble: Making Kin in the Chthulucene,* refers to as multispecies story-telling.

Fungi, hence mushrooms (the fruiting body of the fungus), are not plants: they are classified as separate organisms than plants and animals. Namely, states Elio Schaechter (1998) in *The Company of Mushrooms: A Biologist's Tale*, "…mushrooms belong to a kingdom of their own. Also referred to as Mycota [or Fungi], this kingdom includes not only the mushrooms but also molds, yeasts, smuts, and mildews" (p. 24). In fact, fungi are considered to be closer to animals than plants. The main property in which fungi differ from other organisms is that "…fungi

need organic matter made by other living things for their growth and sustenance" (Schaechter, 1998, p. 24). Moreover, "[unlike plants, they cannot use photosynthesis to produce their own food…" hence "[i]t is in this way that fungi most resemble animals: both ultimately depend on plants for food" (p. 24). While the aim of the thesis is to explore the cross-fertilization of the botanical and the literary, due to their close entanglement with the plants, fungi are studied under botany. Other than this, it is not only due to the fact they are the subject of botany, but also because my aim is to explore the poetic representation of the marginalized, the neglected, or oftentimes abhorred plants.[10] This includes fungal beings: namely, the vegetal and fungal other. People have either mostly responded to mushrooms with apathy, have welcomed them with extreme admiration, or have viewed mushrooms from that ambiguous place of fear and fascination. In all cases, most people tend to underestimate or misinterpret the fundamental biotic role of fungi. Schaechter (1998), explaining the fundamental role fungi play in sustaining all life on earth, suggests that

> perhaps the greatest role fungi play, in the global sense, is that of major recyclers. Fungi are responsible for most of the recycling of vegetable matter, from a blade of grass to a large tree...Were it not for the fungi, dead plants and trees would accumulate to great depths and become a "sink" in the carbon cycle. In time there would not be enough carbon dioxide to sustain plant photosynthesis at more than a snail's pace, and animals that ultimately depend on plant life could not survive. (p. 26)

He further argues that fungi are so important "in the recycling of organic matter that life on earth as we know it would be impossible without them." (p. 26-27). However, even though this is the case, he indicates that "fungi are often ignored" (p. 27). Shaechter attributes this to the fact that

> …the recycling of natural matter is a relatively new concern. To some extent, biological degradation has been of secondary interest even among scientists, perhaps because human beings are more attracted to growth than to decay.

[10] Abhorrance being mostly a cultural signification rather than a biological one.

> We think of scavengers in negative terms and do not make allowance for their essential service in the cycles of matter (p. 28)

It is precisely in this apathy, or even contempt, that the necessity of an Ecopoetics that will integrate the fungal and vegetal other, becomes all the more desirable for all-inclusive, multi-species stories to be told.

A depth ecology that will immerse itself into the hot, dead, and decaying, brimming with non-human yet fundamental life is called for. These multispecies stories will also include the creatures "nocturnal, anaerobic, cannibalistic, microscopic, digestive, fermentative, cooking away in the warm dark" as Snyder (2008) puts it in *A Place in Space*: "a poetics that will help "acknowledge the autonomy and integrity of the nonhuman part of the world, an "Other" that we are barely beginning to be able know" (p. 168). The speaker in Amy Clampitt's (2010) in "Reedbeds of Hackensack" poses the question that reiterates this call for a new nature writing: "[i]s there a poetry of the incorrigibly ugly? (p. 115). A nature writing that will respond to Clampitt's question will most likely form an example of a nature writing that Snyder foresees. Namely, a nature poetics that will also engage in the slimy, the damp and moldy, the weeds, the reeds, the fungi that feed on death and give life in return. Although fungi are not necessarily "ugly"; quite the contrary, most mushrooms can be singularly beautiful. However, their ambiguous reception, and human apathy towards them pushes fungi into a space of the unknown, unseen or peculiar "other." All three mushroom poems featured in this chapter engage with the fungal other and, to use Anna Tsing's (2010) term in "Arts of Inclusion, or How to Love a Mushroom," practice "the art of inclusion" in diverse forms (p. 192).

4.1 MH 101: An introduction to mushroom hunting with Gary Snyder's "The Wild Mushroom"

In this poem Snyder walks us through the woods in search of mushrooms, with our baskets and trowels and "a book with all the rules," which is, presumably, our pocket-sized field guide to the local mushrooms.

> Well the sunset rays are shining
> Me and Kai have got our tools
> A basket and a trowel
> And a book with all the rules

Having set the scene as the afternoon golden hour, Snyder offers what looks like a mushroom foraging essential: a basket to ensure that the mushrooms we gather remain intact and not get crushed. But beside this, a basket is preferred so as to enable/allow spore dispersal while the forager looks around the woods for mushrooms. This is an acknowledged ethical, ecological responsibility of a mushroom gatherer (this may take the form of sand paper, boxes, any containers that have holes, that aid spore dispersal). A trowel, which is most often exchanged with a knife, is to cut off only the mushroom, the fruiting body, just above the ground without harming the mushrooms mycelium (the fungal equivalent of roots) below ground, so that the mushroom appears in the same place later again. And lastly, a book with all the rules, the same which Schaechter (1998) suggests the

> fastest way of learning about wild mushrooms…is to enlist the help of a trustworthy person as a 'tutor' and to augment your field experiences by studying one of the many available field guides….The reason you need both and cannot rely on personal advice is that popular knowledge does not travel well. Familiarity with mushrooms of one region of the world may be misleading in another. (p. 66-67)

In short, with Gary Snyder as our trustworthy tutor, and our field guide to local mushrooms, the tools both for identifying, as well as gathering seem complete.

Snyder continues the next stanza with small aphorisms warning the reader, the new mushroom hunter:

Don't ever eat Boletus
If the tube-mouths they are red
Stay away from the Amanitas
Or brother you are dead

First of all, although there are edible Boletus species, like the much prized *Boletus edulis*, the Porcini, often referred to as the king of mushrooms, and is considered a delicacy; there are also poisonous species, like the *Boletus frostii*, the Frost's Bolete, "one of the most beautiful of all the mushrooms" with its intense crimson colour (Scaechter, 1998, p. 83). Yet, interestingly, although "this species is edible,…it is seldom gathered because field guides recommend staying away from boletes with spores that turn blue on bruising, as most poisonous boletes do" (Scaechter, 1998, p. 82-83). Like most field guides, Snyder's short rhyme reiterates the generalization that still applies to most poisonous boletes, and overlooks the one species that is edible for a cautionary approach. The Amanita family, on the other hand, includes some of the most poisonous mushrooms like the death cap. Although they look admirable in appearance, the Amanita is the family of mushrooms that contain some of the most poisonous members of mushrooms, such as *Amanita phalloides*, known as the death cap. In Turkish it is called "Köygöçüren," which connotes that the mushroom can empty a whole village of its people. However cautious one should be of the Amanita family, there is also the much-championed *Amanita caesarea*, that is, Caesar's mushroom which is a highly esteemed edible. Yet, as a knowledgeable

mushroom gatherer would suggest, Snyder's speaker finds it advisable for us to avoid amanitas all together, again as a cautious practice.[11]

Furthermore, although there is the informal, playful air characteristic of Snyder's poetry, "Or brother you are dead," this playful tone does not take away from the reverence that Snyder displays in his poem. In fact, it even strengthens the caution that should be taken when hunting for and eating mushrooms. Because "all the rules" Snyder gives are more like "rules of thumb" and could by no means be sufficient to safely identify and consume mushrooms. Because "…there are no general rules for telling an edible mushroom from a poisonous one" as Elio Schaechter underlines (p. 68). Hence, considering the complexity of identifying mushrooms, which would and should make any amateur refrain from consuming mushrooms without hundred percent correct id, it is evident that Snyder here is simply brushing over only a handful of points of caution to the new fellow mushroom hunter. He makes only a couple of warnings, and the gaps are left to be filled by the reader, the fresh mushroom enthusiast. As reductive as they may seem, these are similar to the small pieces of nature wisdom that are exchanged among people to make recognizing poisonous plants easier like the "leaves of three, let it be" used to help one remember and avoid coming into contact with poison ivy. However, these rhymes or sayings connected to death and the poisonous have most of the time been entangled with humour. This is also very characteristic of Snyder, to season the sternest facts, even the life-threatening calamities with a humorous, or

[11] This was the case with my first mushroom foray I have joined in Belgrad forest. Before anything else, the new mushroom foragers were made aware of the poisonous species and the dangers of confusing them with the edibles, and instead if we wanted to pick mushrooms later on our own, we were directed to pick the "safer" species, which were the black trumpets, *Craterellus cornucopioides*, who only had one resembling species that lives in Istanbul, which again is an edible. Following this was the information of the baskets, and to use knives and the reasons for doing so. In other words, Snyder's poem so far, with or without intention follows what one could experience in their first mushroom foray.

light-hearted take. It is an easier, catchier way of remembering important information. There is no doubt of the seriousness of the business, he does not need to explain why touching poison ivy is not a good idea, or the slow and painful death one might experience from eating a death cap. The only thing they are concerned with is at this point to make one remember: it is a compact piece of knowledge you can take into the woods with you, and the abab rhyme functions here like a practical mnemonic device. The lines are like the pocket guide to local mushrooms, or an audiobook, but much more compact, condensed into poetic form. Snyder is actually giving us mushroom hunting fundamentals for beginners. It is entertaining for the mycologist, the amateur mushroom enthusiast, and readers of poetry alike. The humorous undertone of the poem is of no surprize when considering the fact that mushroom hunting groups and communities are most frequently laden with witty mushroom puns, and print t-shirts.

Apart from the mushrooms themselves Snyder provides information about the before and after of the mushrooms appearance. He gives us a glimpse of the stories of the mushrooms and the creatures they are entangled with:

Sometimes they're already rotten
Or the stalks are broken off
Where the deer have knocked them over
While turning up the duff

The word "sometimes" reiterates the speaker's previous encounters and the familiarity with the mushrooms. Each line adds a layer to the story: from the broken stalks of mushrooms, we see deer, from the deer, we see them nuzzling through the detritus with their nose in search of mushrooms. In fact, with the deer coming into the scene, it becomes much clearer that the sometimes rotten or munched on

mushroom that is spoken of is most likely Amanita, mentioned in the previous stanza, more specifically the *Amanita muscaria* because deer are known to feed on it. This iconic and beauteous mushroom often adorns illustrations for fairy tales and children's stories, has psychoactive properties, and is often the image that one visualizes when one thinks of mushrooms. Moreover, it is the mushroom that we often see associated with the mushroom in Alice's Wonderland, although the original illustrations made by John Tenniel for *Alice's Adventures in Wonderland and Through the Looking-Glass* show the mushroom that the caterpillar sits on, and which Alice tests, only as an umbrella-shaped mushroom and does not clearly indicate the mushroom as fly agaric *(A. muscaria*) either in text or visually. Yet understandably, it is still the depiction that often accompanies reproductions and art work related to Alice. Additionally, it is even thought that with his red and white clothes, and rosy cheeks, and flying reindeer, Santa Claus' origins may be connected to the Sami people's shamanic rituals that are hallucinogenic induced using deer urine that is intoxicated with *A. muscaria,* whose story is told in the BBC documentary "Weird Nature: Peculiar Potions" (Robert Downer, 2002). Moreover, this stanza consolidates Gary Snyder's very first point in support of the new nature poetics where he suggests that new nature poetry should be "nature literate": That is, [k]now who's who and what's what in the ecosystem, even if this aspect is barely visible in the writing." (p. 172) In other words, the poet should incorporate the knowledge of ecology, and their surroundings and the micro- and macro organisms one lives with. It is almost as if this knowledge seeps into the very being of the poem, even if it does not dominate the discourse. Likewise, although Snyder does not openly present the deer's association in the ecosystem with the Amanitas overtly, the reader can find this information embedded within the lines, just beneath the duff.

The second premise that follows nature-literacy is that the new nature writing should be place-literate, that is:

> That it be grounded in a place--thus, place literate: informed about local specifics on both ecological-biotic and sociopolitical levels. And informed about history (social history and environmental history), even if this is not obviously in the poem. (p. 172, 2008)

In the next stanza, in addition to being nature literate, one can note that the speaker is also place-literate. The next stanza demonstrates both nature literacy and place literacy. In other words, Snyder knows the geography well enough to know where to look for mushrooms and look for the specific indications and clues and signs to find them:

> If you look out under oak trees
>
> Or around an old pine stump
>
> You'll know a mushroom's coming
>
> By the way the leaves are humped

Schaechter speaking about the fact that one very seldom sees a mushroom popping out of the ground in Northern US oak forests suggests that one can be misled due to the lack of visible mushrooms in oak forests in season, yet "during the season mushrooms are abundant, although they remain hidden from sight…" This is because

> the leaves of the live oaks are leathery and tough, and with scant rainfall they decompose very slowly. Here, the ground is covered by a thick protective layer, sometimes four to six inches deep. Underneath the moisture is retained for a long time…Even robust mushrooms, however, have difficulty emerging from this layer of thick duff. Instead, they push the leaves up into visible mounds. (p. 71-72)

Although Gary Snyder does not elaborate on the reasons that form leaf mounds, like Schaechter does, rather he teaches his reader practical knowledge on how to read this sign in nature, namely, he guides his reader to see mushrooms where there appears only mounds of leaves.

Last but not least, another subtle piece of knowledge feeding the poem is that

fungi often form root association with specific trees, which is called mychorrhiza (Schaechter, 1998, p. 226) In other words, some fungi can be found specifically under one type of tree, or prefer multiple types of trees, like the black truffles, *Tuber melanosporum,* also known as "black diamond"; it may associate with oak trees, and hence can be found to develop under oak roots (Schaechter, 1998, p. 163). Furthermore, since the fungi can also be found on a tree, if one knows a tree host specific mushrooms, it is likely that they will see them again there in the future. To read Snyder well requires nature literacy: this means knowing about the mycorrhizal associations whether by scientific study, by experience, or by handed-down knowledge; and place-literacy, which is one of the first requirements of hunting for wild mushrooms. Being aware of the local specifics, as one edible mushroom in one region, can have its poisonous imitator in another region (Schaechter, 1998, p. 67).

Here the ballad stanza with its abcb rhyme scheme gives a sense of sustained control without giving the impression of strict regulation throughout the poem. At first read the science is not that overt, though the place literacy is. When one reads more carefully, it becomes apparent that Snyder knows "who's who and what's what in the ecosystem." Besides content, the sustained rhymed lines, also reiterate and complement the speaker's sense of grasp over the landscape and its stories. The poem is musical, yet also very structured, following the ballad stanza form. This embodies Gary Snyder's playful character found in his poetry, to be so structured that there is still space for natural improvisation, like fractals. In an interview published in his *The Real Work: Interviews & Talks, 1964-79* (1980) Gary Snyder, talking about structure in natural forms, states that

> Nothing is formless . . . Everything takes strict pattern including the flowing water in the stream which follows the physical laws of wave movement, or the physical laws by which clouds move, or gases move, or liquids move amongst each other, or liquids of different temperatures

> interchange. All these things are form, but there is more or less fluidity in the form. (p. 45)

In the same way strict patterning runs through the seemingly unstructured forms of nature, Snyder's poetry also incorporates inherent form while at the same time displaying playful fluidity through its musicality and humorous tone.

The next stanza continues:

They send out multiple fibers

Through the roots and sod

Some make you mighty sick they say

Or bring you close to God

Although the stanzas are grouped in four lines, each stanza, within itself, forms two cases of meaning internally. In other words, while the first and the third lines rhyme in each stanza, the first and second line form a collaborative meaning group, and likewise, line three and four pair up. This shows that Snyder is not only forming his poem in a simple iambic abcb sequence, he is also weaving sound and image, form and content, in fractals. Every stanza spirals back into itself. The couplet of the first two lines forms a semantic curve, and the sound "God," curves us vocally and mentally back into line two, and connects the word "sod." This means that in the poem's organic unfolding, the common pattern is that the first two lines are connected: they talk about "fibres," which may refer to the mycelium (mushroom roots), or the primordia (the early fruiting bodies of mushrooms which the fungi sends, or pins out). Namely, they talk about the mushroom's growth process underground. On the other hand, the next couplet talks about the function or effect of mushrooms on humans:

Some make you mighty sick they say

Or bring you close to God

These two lines can offer multiple readings. The adjective “mighty” sick, associates with “God” in the next line. Some mushrooms bring one close to God, yet it does not explicate exactly how and in what terms. Namely, we do not know if the implication of coming close to god is that of an illness, a near-death experience, or an experience of psilocybin induced spiritual awakening. Either way the experience is grand, it is an experience of the “mighty” with mushrooms. And yet interestingly, the speaker disowns the experience, stating that “some say,” adopting the myth, or language of rumour that often accompanies cases of mushroom poisoning. Oftentimes it is not through a first-hand narrative that we hear about the experience of mushroom poisonings. It is either told by someone else or as the saying suggests, “all mushrooms are edible, some are edible only once.” The “eater” of the “edible-only-for-once” mushroom is often not present to tell the story himself. Moreover, “close to God” is often considered a position where one would be far from a grounded connection to things “worldly,” to people, as if they are on a different realm. Hence the speaker with the “they say” language he adopts, distances himself from the “close to God,” even grounding himself more in the here and now: he is in the forest, on earth, with Kai and the reader, looking for, talking about and learning about mushrooms.

The speaker then goes on to raise a toast in honour of the mushroom family:

So here’s to the mushroom family

A far-flung friendly clan

For food, for fun, for poison

They are a help to man.

Again, the language is very plain and simplified. The amalgamation of the fear-inducing, and the entertaining, negative and the positive dissolve. Food, fun and

poison all merge into the same category, into what is help to mankind. The grammatical parallelism in line three which the "f" alliteration accentuates should be noted. The three functions of mushrooms grouped together, "food," "fun," "poison," reiterate and re-enact the cycle of life, in which "food" is for the very primal necessity of living and "fun" characterizes the interplay, every motion one creates during a lifetime. Poison is the return, death, decay. In other words, the mushroom is a companion to humans throughout their life-cycle. "[f]ar-flung friendly clan" can also denote the fact that mushrooms are neither plants nor animals, and are a separate kingdom on their own. Hence, a "far-flung friendly clan." It gives them a somewhat tribal, human relationship among themselves and connects them to humans in somewhat positive terms. The mushroom family is like a distant sister tribe.

On the other hand, when we turn to the last line of the poem, especially the word "help" opens up space for further thought and questions. In what way are fungi a help to humans? There are many more ways mushrooms and fungi have inspired, helped people such as for biomonitoring[12] for mycoremediation and for medicine.[13] Their role in the ecosystem is invaluable for humans and for plants, and animals alike. Schaechter explains that

> "…the success of a given species is enhanced by dispersing a large number of airborne spores over a large area, sometimes miles away from their origin. Survival of the fittest requires that a species not only out-eat and out-fight its neighbours, but also the ability to spread into new territories. The farther a species travels, the more likely it is to find new sites for growth and development. Nature is not just "red in tooth and claw" —it is filled with wanderlust as well." (p. 54)

[12] In their study "Mushrooms as Biomonitors of Heavy Metals Contamination in Forest Areas," Pawel Swislowski and Malgorzata Rajfur study the mushrooms' suitability for bioindication, "a method of environment condition assessment, mainly changes of pollution levels, on the basis of studies of living organisms reaction to changes in their environment" (p. 558). The study concludes that "[e]dible mushrooms are a sensitive biomonitor of heavy metal pollution level in woodlands" (p. 566). Namely, environmental pollution levels can be traced by studying suitable species of mushrooms. This is also possible with lichen, and some heavy-metal accumulating plants as explained in the discussion of phytoremediation in Chapter 2 on weeds.

[13] See: *Mycoremediation and Environmental Sustainability* volume 1, edited by Ram Prasad (2017)

In line with Schaechter's explanation of the significance of spore dispersal not only in terms of numbers but also of territories, in the aim of travelling farther, fungi have developed sophisticated strategies for spore dispersal. As explained in detail by Schaechter in chapter 3, "Umbrellas and Other Variations," puffballs form a globular peridium that contains the spores, and the external forces, such as wind or raindrops that land on the peridium, and the touch of insects and other animals causes the mushroom to release its tiny spores in smoke-like puffs (p. 42-54). Similarly, some earthstars even form a pedestal like structure to raise their peridium higher to have a better chance of exposing its spores to wind. (p. 42-54). On the other hand, there are the cordyceps fungi that take spore dispersal strategies a little further by manipulating its host insect. Once having infected the insect, cordyceps fungus controls the muscle system of the insect in such a way that causes the insect to climb upwards and latch itself onto a high point where the fungus takes over the insect's body eventually killing it. While the cycle of the insect's life ends here, the fungus completes its life cycle when it develops its fruiting bodies breaking out from the insect's exoskeleton, ready to spread its spores to the forest. This way, the fungus, which cannot actively move, manipulates and controls its host to travel distance and reach a high point from which it can now release its spores. This manipulation was previously thought to have been carried out by the cordyceps fungi invading the host insect's brains, however, it has recently been discovered that the cordyceps fungi do not take control over the brain but rather the muscle system of the insect. As Maridel A. Fredericksen et. Al. (p. 1) explain in their study "Three-dimensional Visualization and a Deep-learning Model Reveal Complex Fungal Parasite Networks in Behaviorally Manipulated Ants,"

> f]ungal cells were found throughout the host body but not in the brain, implying that behavioral control of the animal body by this microbe occurs

> peripherally. Additionally, fungal cells invaded host muscle fibers and joined together to form networks that encircled the muscles (p. 1)

Considering the such different and ingenious ways in which fungi have evolved to disperse their spores, a mushroom hunter trotting through the woods, with a basket packed with millions of dust-thin spores ready to be dispatched with the slightest movement seems to serve as as much help to the fungi as it does to give delight to man. Therefore, besides the fact that mushrooms "are a help to man," humans are, likewise, a help to fungi.

Overall, Snyder is nature literate, place-literate, and clearly knows who's who and what's what in the ecosystem rather well. He offers his wisdom not in an arrogant, flaunting way but using a very clear language offers a very "user-friendly" introduction to mushroom hunting. His language and the contained poetic form is both assuring and in control, yet, Snyder balances this with his playful and humorous tone. The poem opens up a door into the woods, gives an empty basket in one hand and a trowel in the other, what we do next, and, from there, how we engage with mushrooms depends on the reader.

4.2. Mary Oliver: through fungal pathways

The story of mushrooms begins with rain. Mary Oliver therefore, appropriately begins her poem with:

> Rain, and then
>
> the cool pursed
>
> lips of the wind
>
> draw them
>
> out of the ground –

It is water, and then the wind that draw mushrooms out of the ground. It requires humidity and cool air, the optimal conditions to awaken the newly forming mushrooms from the ground. As if sirens luring seafarers underwater, rain and cool pursed lips of the wind lure mushrooms out of the ground. Yet, this is not a luring into death, it is a summoning into life. This is what Flora does to dormant winter ground: it breathes life into the tissues below ground, calling into life what is dormant.

In this sense, one is reminded one of the dynamics in Roethke's poem "Cuttings" and "Cuttings Later." Almost the fungal counterpart of Roethke's "cuttings," plant saplings suck on moisture: they are patiently waiting, and preparing till their time to spring. However, in Roethke's poem, the cuttings, are more animate, whereas here, this time the forces of nature, the rain and wind, are also animate. Another difference is that, unlike most plants, it does not have to be spring or summer for mushrooms to fruit. Mushroom spring is when there is rain. The following lines depict what comes after:

> red and yellow skulls
> pummeling upward
> through leaves,
> through grasses,
> through sand;…

Mushrooms "pummel" upward, like a heartbeat, drawing from the ground, moisture and nutrition, pulsating upwards, upwards. As if suckling through the mother's breast, the mushrooms draw from the ground, to grow. The speaker helps us visualize, and muddle through with the primordia or pins (soon to be mushrooms) through the leaves, through the grasses and sand. The pummelling, pulsating

impression is made with the elongating sound of the "through," repeated in between, mimicking the motion of a worm, reaching forth and pulling its body, reaching forth and pulling its body. The "leaves" the "grass" the "sand" provide the brief pauses in between the moments of collecting one's potency and reaching forth again.

Furthermore, the poem performs a balancing, a capoeira of these forces in that we follow through, and respond to the environment. It becomes an interactive multi-player vr poem and is very much dynamic in that we follow through with the forces of nature.[14] We seep through the earth, under the soil with the down-pouring rain. We strive up, along with the moisture, along with the mushrooms themselves. Then above ground, the wind sweeps us in whatever direction it takes its course. Hence the journey is a down, up, then a horizontal, or a "wind-swept," motion that we follow. From this dynamism, the poem then turns its focus on the fruiting bodies of mushrooms:

> …astonishing
> in their suddenness,
> their quietude,
> their wetness, they appear
> on fall mornings,

The features of the mushrooms that the speaker notes here pose no surprize as their sudden appearance is often one of the most intriguing and puzzling aspects of mushrooms. For many, it is as if they appear "out-of-nowhere." In fact, for centuries people have theorized and speculated on where mushrooms came from as Schaechter explains that "the Greeks and Romans were appropriately perplexed about the origin of mushrooms and seem to have given much thought to the matter. They were

[14] Virtual reality, an interactive, computer-generated artificial experience where the person is made to experience the character, or situation they are in, like a simulation.

puzzled by the fact that mushrooms do not have visible “seeds” and appear out of nowhere” (p. 6). The best explanation Schaechter suggests they could come up with is that “mushrooms are excrescenses of trees, ferments of the earth, or the products of thunderbolts.” (p. 6). Interestingly, Greek philosopher Porphry called mushrooms “sons of gods,” because they are “born without seeds” (Schaechter, 1998, p. 6). The self-same features that perplexed the Greeks and the Romans also find their way into Mary Oliver’s poem, as the speaker brings forth their “suddenness,” “their quietitude,” namely one could say, their out-of-nowhere-ness.

The next section is where the mushroom story bursts into colour and diversity, rich both in terms of images and sounds:

…some
balancing in the earth
on one hoof
packed with poison,
others billowing
chunkily, and delicious -
those who know
walk out to gather, choosing
the benign from flocks
of glitterers, sorcerers,
russulas,
panther caps,
shark-white death angels
in their town veils

looking innocent as sugar

but full of paralysis:

A parade of multi-species procession. Balancing in the earth, although looking effortless, shows the energy concentrated in the simple act of standing upright. From the previous lines we already know the effort and the journey up until this point of display. Now to what seems effortless for the onlooker, the speaker reveals the inner dynamics of what it may be like to "be" a mushroom. Therefore, being is not a stative verb, it is an active, agentic verb that the mushroom carries out. In this case, "balancing on one hoof" shows effort whereas "packed with poison" denotes a sustained potential. The "p" alliteration reiterates the potentially dangerous, explosive, and impatient, as if ready to obliterate not in a mechanic sense, but more in an organic sense, in the same way a poisonous snake would dart for its intruder, or the way Wisteria catapults its dry seeds. The verbs as well as the adverbs are of interest. Mushrooms come forth "balancing on one hoof" and "billowing," "chunkily, and delicious." Not many creatures can billow chunkily and delicious. Again, it is not a static existence, deliciousness is not simply an adjective, but rather it is a pulsating act. It is a verb that the mushroom performs. Likewise, simply having one stem is not an anatomical feature, it is a performance of balance. And for sure, a performance that one should acknowledge. Through this, Oliver makes the mushrooms actors. The mushrooms that seem to sprout out of nowhere, sudden yet quiet, now are performers of different skills when we scale down to mushroom speed, mushroom time and mushroom vision. Hence, like Alice scaling down, and growing, the poem plays not on size but more on the nature of adjectives and verbs, to perform and make one comprehend a mushroom-type of experience. It adjusts the reader's imagination, to match what it means to "be" a single-stem mushroom, to be

so chunky and delicious. Hence, it is not only performing sensuous poesis, as enacting the experience. It is rather transforming and altering the nature of experience and existence.

As often is the case when dealing with mushrooms, here again appears the issue of edibility. Mushroom gatherers, plural like the varied mushrooms themselves, walk out and collect the wild edibles. They choose the safe from the toxic, in all their potent witchery. Benign (like the pastel coloured lilies and cyclamen and roses of Roethke, in his "Weed Puller," the benign, "lovely and inviolate"), the edible mushrooms are grouped aside, while the speaker's curiosity is condensed on the poisonous and inviting mushrooms. This is not coincidental as the next lines conjure the poisonous mushrooms, "flocks of glitterers, sorcerers, russulas, panther caps." The hypnotic, serpentine, seductive "s" alliteration, accompanied by the fervent "r," is more like a magical spell, cast, than a simple roll-call of names. As the sound already performs the spell aurally, the sorcerer seals the meaning, makes sense of the meaning, the magic attached to it. That is, we already start hearing magic performed vocally, before we comprehend it with the word "sorcerer" in the next line. Moreover, the vocally magical shifts into the literally magical, then shifts into the chemically, which then turns into a neurologically "magical." In other words, it first fills the "s" sound, then pours into the semantic word, "sourcerer" becomes a play on the psychoactive "saucer" mushroom, the magic mushroom. Disparate associations become fixated with the overt reference to the conjurer: the sorcerer. One should remember the fact that it is not the benign but rather, the "aggressors" that Oliver prefers to dwell on. They are the active agents in this poem. Hence, the question arises: could we talk of a fungal/mycological outcast, similar to that of Theodore Roethke's weeds? Unlike, Gary Snyder who offers a balanced approach, and more

like Roethke, Oliver sets aside the much sought, palatable, edible, ingestible, King Boletes, Champignons, the Chanterelle's, the Matsutake. She concentrates on the panther caps and russulas, the poisonous, toxic or simply not-preferables.

Moreover, as with casting spells, naming is also important for another area: taxonomy. Anna Tsing (2010) in her "Arts of Inclusion, or How to Love a Mushroom," when talking about the pleasures of naming, asks: "[h]ow do lovers of fungi practice arts of inclusion that call to others? In these times of extinction, when even slight acquaintance can make the difference" (p. 192). The fact that one includes the poisonous, and excludes the edible mushrooms signals that one also admires the mushroom for its qualities other than simply for their taste. Mushrooms offer much more than simply their edibility and nutritional value although the one most common question following the introduction of a mushroom oftentimes is "okay, but can we eat it?" Hence the speaker leaves the edibles to the mushroom hunters, the "those-who-know" and returns to the "others." In the same motion a mushroom hunter who is out specifically, say, for morel mushrooms, would brush over other species as "not-morel," our speaker turns her attention from the edibles, and rather, gazes at the "thou-shalt-not-eat" ibles. That is to say, the poisonous wild mushroom may not be of interest to the consumer who buys the fine delicacies foraged commercially. Or to the mushroom forager, who may seek to sell or eat, the poisonous ones may be of interest mostly due to their markers to avoid. However, considering the excitement around edibility and taste of mushrooms, the fact that the inedible mushrooms form the speakers' main interest in the poem suggests that his motives are not simply driven by a utilitarian impulse, to eat, but rather guided by sheer, genuine interest and wonder at mushrooms. Tsing (2010) argues that "[t]axonomy is not very popular these days; indeed, detractors think of it as dry

classification that spoils all enjoyment. But handling the specimens at the herbarium, it is easy to feel the pleasure of naming. Here, through naming, we notice the diversity of life. Taxonomy was once closely allied with drawing, another art of noticing." (p. 192). According to Tsing (2010), taxonomy offers not a dry vocabulary or boxes to separate living organisms from each other. Quite the contrary, it is a way of becoming engaged in the diversity of life. It is almost a conjuring of and taking joy in variety. In other words, just as it is the case in Howard Nemerov's "Learning the Trees" taxonomy is not a reductive act of separating, but rather another "art of noticing," an "art of inclusion." It is meaningful that Mary Oliver, whose poetry is marked with attentiveness to the earth, to the inhabitants big and small, uses not only Latin names of the species, but also sprinkles the very interesting local names and epithets of mushrooms within her lines. This enriches the poem's sense of inclusion and acquaintance with place. The speaker combines the mycological with the other, local forms of noticing. In other words, Mary Oliver practices science literacy, along with place literacy as complementary forms of inclusion. By contrast, Sylvia Plath in her poem "Mushrooms," uses the mushroom as largely symbolic, and does not demonstrate any indications of nature, or place, or science literacy, and only picks at common mushroom tropes without engaging too much with the actual mushrooms. For example, the following stanza talks about mushrooms lightly touching on their variety:

> We are shelves, we are
>
> Tables, we are meek,
>
> We are edible,

The stanza draws parallels between mushrooms and the connotations domestic, functional, and amenable. However, it does not kindle curiosity, awe, or in depth

thought connected to mushrooms themselves; rather, one can sense a slight connection only to aid the human experience. The poem is commonly read as symbolic, as a poem that uses mushrooms as an extended metaphor for women's resistance. In other words, mushrooms are instrumental in storying the human experience. The lines most entangled with mushrooms seem to be:

Soft fists insist on

Heaving the needles,

The leafy bedding,

as it draws the closest parallel between mushrooms and women's experience of being. It plays on the contrastive softness and hardness, strength and weakness. Plath draws this around the domestic image of sewing or hand stitched beddings. "Soft fists" could denote, the soft hands holding needles while quilting, the women's hands raised up in the air in a gesture of resistance, or the soft caps of mushrooms muddling up, against the soil and the dry needles of coniferous trees. In other words, in this stanza Plath mostly cross-stitches together the mushroom story with the domestic, benign act and the women's resistance. Alike in their perseverance, all three stories conjoin in an ending of probable success. However, in the other lines, mushrooms serve more as the seams holding together the image and metaphor telling the human story. On the other hand, Mary Oliver's poem diverges fundamentally in its approach in that, like Snyder suggests, one can feel her place and nature literacy seep through her lines, even though they are not openly stated in the poem. Although not as drenched in science, one can comfortably notice the nature-place literacy, and in fact, a literacy of at least the mushrooms, and the mushroom-loving circles.

As Tsing (2010) has suggested, considering taxonomy's once close collaboration with drawing, which she views as another art of noticing, one could say

that through naming, and drawing with words, Mary Oliver engages the reader in the "art of noticing" in at least two notable ways. Through sensuous poesis she draws not a static picture, but rather creates a mixed-media animated story of words, in sound, in the mind and on the paper. The poem is constructed without stanza breaks, so the inter-connectivity between story and sound is physically enabled to some extent, on the page. Overall, Mary Oliver engages the reader with mushrooms in sensuous poesis through her knowledge and what appears to ensue from direct experience of mushrooms and woodlands: she incorporates sound and the visual organisation of the poem on the page in the representation of mushrooms.

Looking at the specific types of mushrooms Mary Oliver brings into her poem shows that she is, like Snyder, nature literate and place literate. In addition, in line with Snyder's last point in which he advocates the poets of new nature poetics, to "be crafty and get the work done," she crafts mushrooms and their story visually, aurally and mentally through her text. In other words, through sensuous poesis, her mushroom story is sculpted in multiple ways. Sound and image are supported in the structures of her poem. The cyclical nature of the poem, re-enacts the cyclical nature of the fungi's journey from mycelium, to primordia, to mushrooming, to spore dispersal and to decomposition of the fruiting bodies and finally starting the cycle all over again. While this cyclical nature is made visible with "rain" opening and ending the mushrooms' story, it is also aided by sound, performing the journey. Moreover, the poem depends largely on the vocal and aural for its animacy. The line lengths also directly cooperate with the vocal and aural elements to enhance the meaning of the poem. For instance in the last stanza, the act of ingesting a poisonous mushrooms is performed not only by the imagery, but also by the line breaks that direct the vocalization and hence the perception:

to eat

is to stagger down

fast as mushrooms themselves

when they are done being perfect

and overnight

slide back under the shining

fields of rain.

The brief line carries the connotation of a small piece eaten from a deadly mushroom. It suggests a momentary act, and the line break hints at a pause or a hesitation between noticing that one has been poisoned, and the staggering down suggests succumbing to the inevitable fate that follows. After having completed their goal of being perfect, having reached their maturity, and having dispersed their spores, step by step, like the lines themselves that build up in length step by step, with the last shorter line that reclines back, the mushrooms recede back into the cycle of decay. In addition to the line lengths acting visually, the slant rhymes of "overnight" and "slide," and "shining" and "rain," vocally and aurally enhance the motion's liquid and down-the-drainage quality. And metaphorically, the closing word rain ignites a chain of connections to the words that animate the opening lines of the poem, and helps the reader imagine the mushrooms slide back underground, like an extension and a finalizing motion of those movement, like all things washed away with rain, as if knowingly and with ease. In other words, reiterating Gary Snyder's premise to "be crafty and get the work done," Mary Oliver crafts her poem using poetic elements that cater to different senses, and refines these in a balanced harmony, all of which give the poem a tangible and dynamic quality along with encouraging new connections and ways of thinking about mushrooms.

Overall, the poem does not fan out and offer the "richness" of the multitudinous stories possible of each individual type of mushrooms she lists. Namely, it does not delve into the stories of the russulas, or the sorcerers, or the shark-white death angels. However, it does offer a glimpse into the extent of diversity and excitement the fungi kingdom holds. The cyclical structure, sound, image, and form, all complement to this rich, kaleidoscopic ongoingness of mushrooms.

4.3. Marvin Bell: The Book of the Dead Man (Fungi)

With Marvin Bell's 1937 poem "The Book of the Dead Man (Fungi)" we diverge from the latter two poems in certain aspects. Firstly, in terms of form, Bell structures his poem in two parts, numbered: "1. About the Dead Man and Fungi" and "2. More About the Dead Man and Fungi." First of all, Mary Oliver's poem had started with rain, as a bringer of life, a conjurer breathing life into mushrooms, or more appropriately, a conjurer breathing mushrooms into the world. Bell, however, prefers to open his poem with a Zen admonition: "[l]ive as if you were dead." From the very beginning, Marvin Bell revokes the distinction between life and death, and gives us a notion to read the rest of the poem with. By the time one finishes reading the opening line of the poem, the word "dead" has already appeared four times. This inevitably sets the tone of the poem, making death and its associations integral. He starts the poem with an announcement of a shift in the dead man's perspective:

> The dead man has changed his mind about moss and mold.
> About mildew and yeast.
> About rust and smut, about soot and ash.

This stanza follows a recurrent pattern and partners “moss and mold,” “mildew and yeast,” “rust and smut,” and “soot and ash.” What these pairings have in common seems to be that they all contain some similarity in terms of their physical appearance, and could be confused for one another. However, viewed closely, this is merely a physical similarity and not a physiological or a biological one. For instance, moss is a plant whereas mold is fungus, that is, they belong to completely different families of organisms: kingdom Fungi and kingdom Plantae. Moss has to produce its own food through photosynthesis whereas mold relies on outside sources for nutrition. However, moss and mold both, alike, need moisture to thrive. The next couple, mildew and yeast, are on the other hand, both fungi. However, this time the difference lies in their nature and their function. While both can be plant or animal pathogens, yeasts differ from mildews in that they have long been involved in positive partnership with humans in the making of bread, and alcoholic beverages like wine and beer. The next pair of rust and smut are understandably placed together, as Steven L. Stephenson (2010) in *The Kingdom Fungi* explains that “[smut] are similar to the rusts in that they do not produce fruiting bodies and are all obligate parasites of plants, although only a single host plant is involved. In spite of their similarities, smuts and rusts are not closely related” (p. 183). In other words, smut and rust are not related other than the fact that both fungi depend on a parasitic relationship with plants in order to survive. One should note that, these mostly mono-syllabic pairings are not arbitrary and have an internal pattern to them. The next pair however, diverges from the previous as it incorporates not living creatures but rather soot and ash. These two, which may both seem like dust, are extrapolated in their connection with fire, and their physical similarity. The common feature connecting all components listed may be first, their miniscule size, and second, the fact that they

all appear on, or cover something else, be it a living entity or a rock, a wall, a piece of tree or land. Namely, it may simply be that they are all small and that they cover other things. In addition, unlike the dead man now, it is not often that one thinks about rust or smut, or mildew, or soot or ash. But when one does, it is oftentimes about how to get rid of them.

This is where the shift in the dead man's approach lies. The next lines reveal an acceptance of that which used to be shunned or avoided: "Whereas once he turned from the sour and the decomposed, now he breathes deeply in the underbelly/ of the earth."

While the speaker previously listed fungi, associated with "the sour and the decomposed," the marginalized and often disdained fungi, he declares that he no longer avoids the thought or interaction with them. In fact, the implication is that he has now become one of them. He breathes, in the soft, alive underbelly of the earth, in the same way these micro fungi breathe and multiply, out of sight, out of mind. He mentions the fungi under which he now breathes, speaking from the underbelly "Of mushrooms, bakers yeast, fungi of wood decay, and the dogs preceding their masters to the/burnt acre of morels." The preposition "of" suspended mid-air, and the lack of a clear modifier slightly muddies the meaning. However, the addition "in the underbelly…" from the previous line has been made so that coherence can be restored. Like the baker's yeast he mentions, "…*Saccharomyces cerevisiae*, commonly known, depending upon the circumstances, as baker's yeast or brewer's yeast," the dead man continues to live and thrive under the surface ground, an environment usually considered the default place for life (Stephenson, 2010, p. 225). Stephenson (2010) explains the nature of baker's yeast:

> [t]he function of yeast cells in the process of producing leavened bread is one of simply utilizing sugars present in the flour or added to the dough as

> an energy source and then giving off carbon dioxide and ethyl alcohol as a result. The carbon dioxide is trapped within tiny bubbles and results in the dough expanding (or rising). These bubbles are responsible for the texture of the bread, which is very different from that of unleavened bread. (p. 225)

Therefore, the dead man breathing in the underbelly of earth, acts like the yeast that intakes sugars exchanging it for carbon dioxide. While the yeast causes the bread to rise and changes the very texture of it, the dead man's function is unknown at this point, although it is certain that he is an active agent in stirring the life below and above ground. Continuing the line, "and the dogs preceding their masters to the burnt acre of morels" is another reference to fire and being burnt. This is rather interesting when one considers the fact that the much prized morel mushrooms are known to fruit after forest fires. As Stephenson explains: "…morels often occur abundantly in the two or three years immediately following a forest fire, and commercial collectors in places like Alaska are known to follow forest fires to take advantage of the bountiful collecting that is often possible" (p. 87).[15]

It is clearly visible that Marvin Bell is, in Snyder's words, nature literate, and specifically fungi literate. The poem confirms that Bell knows his mushrooms. However, Marvin Bell does not flaunt his knowledge of mushrooms, his knowledge of nature and the local geography, nor his knowledge of science. He leaves it as a small reference which the reader may pick up, or may simply read past without having to distort the overall consistency of the poem. Moreover, apart from an implication of the poet's knowledge of mushrooms, "the burnt acre of morels" also connects morels to the soot and ash in the third line, continuing the connection of fire in the undertone. In addition, this is the first time Bell openly connects the fungal

[15] See also "Post-fire morel (Morchella) mushroom abundance, spatial structure, and harvest sustainability" by Andrew J. Larson et al. (2016), the article which first studies and documents the rates of morel growth after forest fires.

life, with human activity: mushroom hunting. However, in this activity of hunting mushrooms, which can be mutually beneficial both for humans and fungi alike if done in a sustainable and respectful way, the dog leads as a companion species. The appearance of a dog first seems natural as it is easy to envision a dog walking with its companion human in an outdoor, often a forest setting. However, in the lines it is the "master" that is being lead. This inverts any hierarchy between the dog and the person, which is of significance when one considers the importance of position and bodily gestures for dogs in signalling authority. In other words, a dog that leads you, often validates and communicates the message that they are the authority. Rightfully though, the dog in this case is the authority in finding morel mushrooms due to its sophisticated sense of smell. In fact, these lines open up the fact that some people do train their dogs to find morel mushrooms. The image, and the fact that mushroom "hunting" is the phrase exchanged among mushroom foraging communities further establishes an image of a "hunt." However, unlike an actual hunt, which centres on killing animals, the morel hunt kills nobody.

In fact, it could even be considered a way of spreading life, and helping the mushroom to get to places it otherwise could not. Therefore, this is a give and take, a reciprocal relationship between the mushroom, the person, and the dog. Donna J. Haraway explains in *Staying with the Trouble: Making Kin in the Chthulucene,* that "string figures can be played by many, on all sorts of limbs, as long as the rhythm of accepting and giving is sustained" (p. 10). Hence, it is a string figure game that bonds these creatures, the mushrooms, dogs and humans, together in their interest in exquisite taste, ensuring continuity of genes, companionship, and, affection and reward in addition to shelter and food. Overall, Marvin Bell, with each word added, i.e. the word "burnt," or "dogs," or "master," adds a layer to the story, making it a

multi-species, multi-layered narrative. Like an interactive story, the reader can choose between interacting with specific words and open up the multiple layers of meaning, and images, and stories beneath their surface. Or they can continue their journey forth to the next lines.

Added to the micro and macro-fungi of the previous lines, the speaker now mentions the tiny, delicate mushrooms that he sees above him.

> And the little seasonals themselves, stuck on their wobbly pin stems.
> For in the pan they float without crisping. For they are not without a-
> hint of the
> sublime, nor the curl of a hand.

The little mushrooms the speaker mentions here most likely point to the pinwheel mushrooms of the *Marasmius* species, which in fact do balance on thin hair-like stems, and can often be found on dead leaf matter. The speaker provides a negative description however, rather than stating the mushroom's properties: apart from having a "wobbly pin stem," this tiny leaf dweller is described by what it lacks, or what it does not lack. Namely, Marvin Bell does not draw a direct profile of the mushroom; rather, he traces the outlines to create a negative image of it. For instance, they float "without" crisping in the pan. And, they are "not without" the hint of the sublime, "nor" the curl of a hand. Instead of openly stating that they encompass a hint of the sublime, the speaker recedes into half-negation. This further reiterates the "wobbly" existence of these seasonal mushrooms, and their liminality hitherto, as wobbly suggests not a recline towards right or left, nor an upright stern position. It suggests frailness, or a struggle to balance. Likewise, they show a subtle "hint of the sublime," and the curl of a hand. That is, the mushrooms hint to a supreme order, a divine entity, or god, and at the same time, point to the human:

collecting the sublime and the human in the same frail body. It is also of interest that, the concept of the sublime is often associated with awe-inspiring grandeur both in terms of size and thought. Yet, here, sublimity is in the wobbly stem of a pinwheel mushroom. This may account for the meandering description, rather than a grandiose announcement of the sublime. It is not beyond grasp due to its magnificence, but rather, escapes grasp due to its too small and too thin size. The phrase "curl of the hand," performs the curl of the small mushrooms, both physically as one vocalizes, and aids the visualisation process, perfectly complementing the delicate pins.

In the next lines the poem unfolds into rich flavour, an urge one quite often sees when talking about mushrooms, in and outside poetry. This gives the sense that the mushroom kingdom are of such great diversity that these all-quintessential kinds of mushrooms are only the overflows spilling out of a rich cornucopia: "These are the caps and hairdos, the mini-umbrellas, the zeppelins of a world in which human/beings are heavy-footed mammoths." These lines take us through a carnival of fungi akin to that of Mary Oliver's poem. The caps and hairdos and the mini umbrellas, somehow with their fashion, connote a street scene of the early twentieth century, and the mention of the zeppelins hastens this journey to the near past. Yet the addition of mammoths take us farther to a more distant, pre-historical time. Also the military, and the psychedelic are all brought together with one sentence, with the juxtaposition of these seemingly disparate words. Marvin Bell, in his interview with Loren Glass (2017) "A Lifetime in Poetry: Marvin Bell on Iowa and the "Dead Man" Poems" explains that one "…can't discuss the line without discussing syntax. Because syntax provides all the opportunities — for enjambments and end-stops, for changes in timbre, tone of voice, pace, pitch … Syntax is the secret to a strong voice in free verse" (section on Bell's poetic form and syntax). In the same way, echoing

Bell's approach, the Dead Man's poem calls for attention to syntax in that, as seen in the previous lines, his word choices not only configure the tone of voice, the pace and pitch of the poem, but also tunes into new areas of meaning, new ways of seeing, and being.

In their article "Plant Poetry and the Botanification of the Imagination," Padma V. McKertich and V. Shilpa, (2016) discuss the shift in perspective that is aided by disparate words and shifting syntax:

> [the lines]…begin with a human perception of the mushrooms – caps, hairdos, umbrellas – and are indicative of an anthropocentric understanding, inevitable and natural. But the anthropocentricity is subverted, as the line continues to describe a "world in which human beings are heavy-footed mammoths." The entire world is then viewed from the mushrooms' perspective. Such a shift is characteristic of plant poetry. (p. 45)

As McKertich and Shilpa (2016) suggest, such a shift from the anthropocentric to a plant-centred vision is significant and marks much poetry entangled with plants, especially with poets such as Louise Glück (1992), whose entire sequence *The Wild Iris* is dedicated to poems recited from the plant perspective. Though not as explicit, some of the "Green House" poems of Roethke could also be cited. The case here is not a shift characteristic of plant poetry only, however: such a shift is also characteristic of psychedelic experience connected to mushrooms. As Schaechter (1998) explains in his *In the Company of Mushrooms: A Biologist's Tale*, one of the effects of *Amanita muscaria,* appearing respectively in the discussion of Gary Snyder, and Mary Oliver, "is to distort the size of objects and their surroundings, making them appear larger or smaller" and that "[v]isual hallucinations of this sort may explain the episode in Lewis Carrol's *Alice in Wonderland* in which Alice shrinks or elongates depending on which side of the mushroom she nibbles" (p. 193). Schaechter explains that "[t]here is evidence that Lewis Carrol was well informed

about the hallucinogenic power of mushrooms and was aware of the visual distortions caused by the fly agaric" (p. 193). Likewise, it is not surprising that Marvin Bell, like Lewis Carrol, would be well informed about the hallucinogenic properties of mushrooms and their effects.

The next lines continue the scene opened by the quaint procession of vibrant mushrooms, zeppelins and mammoths:

Puffballs and saucers, recurrent, recumbent, they fill the encyclopedia.

Not wrought for the pressed eternity of flowers or butterflies.

The speaker points to the array of fungi, from the spore-dispersing-genius puffballs to the psychoactive saucer mushrooms. The line is intersected with the adjectives "recurrent" and "recumbent," and the slant rhyme re-enacts the recurring nature of the mushrooms. Giving only two adjectives, the speaker emphasizes that there is much to know about these mushrooms, enough to fill the encyclopedia. Moreover, the word encyclopedia connects well with the next line's context drawing on natural history. The speaker claims that mushrooms are not wrought for the pressed eternity of flowers or butterflies. In other words, unlike plants who can be illustrated, pressed, dried and stored for a considerable amount of time in herbariums; and butterflies, which again can be pinned and preserved in an insect collection mostly intact; mushrooms, although they can still be preserved, lose most of the qualities which make them vibrant when they are dried. If not, they are not very suitable to be presented in a cabinet of curiosities, not "wrought," designed, sculpted or put together, like a small, intricately ornate artefact. Unlike the butterflies killed and sold in framed glass displays for decorations, fungi do not yield to such aesthetic purposes. "[P]ressed eternity," however, would be more correct to suggest instead "fixed eternity." Although the exoskeleton of the butterfly is preserved, its chances

of passing on its genes have been reduced, if not completely eliminated. Likewise, the pressed flowers of the herbarium have most likely been removed from their utmost goal of pollination mid-way through their adventure. Therefore, one may suggest that, like John Keats' "Ode on a Grecian Urn," the science's methods of preservation of the plants and insects may offer "eternity," in their prime time, but only a frozen, in this case, dried one. It is also noteworthy that in his comparison of preserving specimens, Marvin Bell brings together members of the kingdom Animalia, kingdom Plantae, and Kingdom Fungi.

From the territories of natural history we return to the motif of war. "Loners" will suggest a somehow stoic, solitary soldier. Whereas "armies" will suggest a human presence, that goes hand in hand with the fact that mushrooms can appear as clusters, huddled together, or as single members on their own, or scattered around a vast area:

> Loners and armies alike appearing overnight at the point of return.
>
> They live fast, they die young, they will be back.

Apart from the ways mushrooms can appear, the line points to the fact that mushrooms fruit rapidly appearing "overnight," where nothing appeared before. The phrase that calls attention to itself is "the point of return" which is a distortion of the military term "the point of no return" which means, according to Merriam Webster, "the point in the flight of an aircraft beyond which the remaining fuel will be insufficient for a return to the starting point with the result that the craft must proceed." The second defines it as "a critical point at which turning back or reversal is not possible." Hence, considering the definition, the slight twitch in the military term upturns the meaning. From a point in which reversal is impossible for the soldier, or the aircraft, it turns it into a beginning, a coming home. While point of no

return could possibly hinge on a possibility of death and never returning back for the human soldiers, for the fungal loners and armies, the overnight suggests a re-appearance. "[P]oint of return" almost an entrance gate into the world. This is possible for the mushrooms as they make their appearance not from death, unlike the soldiers, but rather their point of return suggests their reappearance where their mycelium still lies below ground. Therefore, reiterating the previous line, like the soldiers scattered to the shores of war, living in urgency, dying in urgency, the mushrooms appear sudden, and fall sudden, a fact of nature Mary Oliver also slowly weaves into her poem. Yet, unlike the young human beings that were pushed off of the edge of life, the mushrooms will be back. However, considering the nature of war, one could also argue for a parallelism here, as although the soldiers taken by death will not be back ever again as the same individuals, yet they will most likely be "replaced" by other young soldiers by order. In the same way, the self-same mushrooms that withered, plucked or unplucked, will be replaced with new fruiting bodies of the same species as long as the mycelium remains intact. Therefore, one could argue that, for Marvin Bell, the "Dead Man" concept, and the mushrooms provide a frame that renders the transition between death and life possible and easy, and visualizes it as if the above the ground and below it lies one step away.

Marvin Bell organizes his poem in a dyadic structure. As is the case with the other poems in his book, the second part of the poem starts with the restatement of the title with a small additional phrase. He explains his motive for this in his interview with Loren Glass: "…I used the first "Dead Man" poem as a matrix. I was drawn to the idea that you could approach anything a second time. That a poem could seem to be finished but then start up again, and that any line might connect to any other line — again, a kaleidoscopic structure" (section discussing the dyadic

structure of the poems). Therefore, in the same way the ending of the first section prophesized: “The Dead Man (Fungi)” is back again. While the poem could have been finalized, it is numbered and revitalized: “2. More about the Dead Man and Fungi.”

> Fruit of the fungi, a mushroom’s birthing is an arrow from below.
>
> It is because of Zeno’s Paradox that one cannot get there by half-measures.
>
> It is the fault of having anything else to do.

The lines that open the second section do not readily yield themselves to interpretation, and are much more enclosed and cryptic than that of the first section. Marvin Bell draws from Zeno, the Greek philosopher’s arrow paradox and the dichotomy paradox, which play on the concept of movement, time and distance. This may be that mushroom’s birthing may seem like it will not happen, yet. Or it may suggest the fact that in the same way Zeno’s paradoxes have provoked thought and debate, the appearance of mushrooms has also been a phenomena that for centuries was shrouded in mystery. This mystery and secrecy attached to mushrooms is carried on to the next lines: “The dead man prefers the mushroom of the gatherer to that of the farmer./Gilled or ungilled, stemmed or stemless, woody or leathery, the mushroom is secretive, yes, by/nature.” It is not surprising that the dead man prefers wild mushrooms, instead of commercially grown mushrooms. This may even account for the reason he is dead, as a commercially grown mushroom has little chance of poisoning you, whereas with foraged mushrooms, the stakes are high. Followed by the preference, lies a statement implying the difficulty of identifying mushrooms even though one may have an idea of its distinguishing properties such as its gills, its stem, its texture, to which smell, and taste, and many other parameters

are added for a hundred percent positive id. Therefore, in all their secretiveness, the dead man still prefers the wild, foraged mushrooms. This very much resembles Mary Oliver's gravitation towards the inedible and potentially toxic mushrooms in her poem, rather than the much prized edible species.

The next two lines are devoted to telling the story of mushrooms and the tense lightly adjusts to the simple past to suit the storyline.

Each mushroom was a button, each a flowering, some glow in the dark.[16]

Medicinal or toxic, each was lopped from the stump of eternity.

With the forager cutting, severing the fruiting mushrooms from the ground, their story was also cut short. The stump of eternity may imply the continuity of the mushroom around the same area, as long as a responsible harvest is carried out and the mycelium is undamaged. Where they went after the promised land of eternity is vague; however, it is interesting that the story of the mushroom's being picked is by no means the end for the mushroom. The speaker adopts a somehow dire tone that reminds one of elegies for unnamed heroes. The lines enforce the individuality of the mushrooms with the word "each"; it directs the reader to consider mushrooms individually, not only as a collective group. This may be due to the fact that the act of severing the mushroom from its natural ongoing cycle may seem like an act of disrespect. This is the case because although there is a controversy around mushroom

[16] Ebele Martina Ilondu, and A. A. Okiti, in their "Bioluminescence in Mushroom and its Application Potentials" explain that "[b]ioluminescence comes from the Greek word 'bios' meaning living and the Latin word 'lumen' meaning light" namely "living lights" (p. 132). Bioluminescent fungi that can emit light "was described by Aristotle as early as the 4th century B.C. and Pliny in the 1st century A.D. Aristotle called this phenomenon 'shinning wood' and 'fire fox'. Pliny the elder (23-79 AD) mentioned feasting on a glowing, sweet fungus found on trees in France and, in the late 15th century, a Dutch consul gave account of Indonesian peoples using fungi fruiting bodies to illuminate forest pathways" (p. 132) Anderson G. Oliveira, et al. (2015) in their "Circadian Control Sheds Light on Fungal Bioluminescence" explain that the reason for bioluminescence in fungi has recently been confirmed to be regulated by the circadian rhythms, that is, quoting from Jay C. Dunlap et al.'s *Chronobiology: Biological Timekeeping,* "…biological oscillators responsible for maintaining the internal rhythms of animals, plants, fungi, and cyanobacteria to the alternation of external stimuli as light and temperature" (p. 964).

hunting, commercial or casual, and some concerns regarding overharvesting and the impact of trampling of forests while foraging for mushrooms. However, there is also a study carried out by Simon Egli et al (2006): "Mushroom Picking Does not Impair Future Harvests- Results of A Long-term Study Carried Study in Switzerland" that argues mushroom foraging does not damage future mushroom production of the fungi, and argues that there is yet no evidence to support that "trampling of the forest floor does not harm the mycelia in the soil," the below-ground hyphae that enables the reappearance (p. 275). However, "[f]ewer [fruit bodies of the fungi (mushrooms)] are formed after trampling of the forest floor, but they reappear when the sites are left to recover" (p. 275). That is to say, the tone here, must be not a biological elegy, an elegy to ecosystem due to a loss of species. However, it is also the case that the almost guaranteed return of mushrooms, taken for granted, does not cancel out the necessity of a respectful and dignified treatment. In other words, echoing the last line in the first half of the poem, the fact that "they will be back" does not cancel out the necessity of treating mushrooms with dignity. Hence, the dead man may be mourning the death of life precious, in all its exuberance, severed by a simple motion of a hand.

The diversity, the richness of colour and texture and names could be factors that make this loss the more dismal. Furthermore, "The dead man has seen them take the shapes of cups and saucers, of sponges, logs and bird nests./The dead man probes the shadows, he fingers the crannies and undersides, he spots the mushroom/underfoot just in time." One could read these lines in multiple ways. First may be that the dead man is hunting for mushrooms, hence he is looking at every possible place. This is the case of a foray especially if you do not have a specific type of mushroom, say that grows on the ground. That means one should keep an eye for

trees, as mushrooms can also be found growing on trees, like the cherished, vibrant orange and yellow coloured edible, chicken of the woods, *Laetiporus sulphurous*. Another reason is that as mentioned previously, most mushrooms are mycorrhizal, meaning they grow. Therefore, for example, if one is looking for morels, he/she should keep an attentive eye to trees, or if one is looking for King Boletes, commonly known as Porcini, one should look for oaks, and broad-leaved trees. If one is looking for Matsutake, they should look for conifers, because these mushrooms "…inhabit northern hemisphere forests, associating particularly with conifers such as pine" (Tsing, 2010, p. 196). Therefore, as Snyder suggests, if one wants to know mushrooms more, one should acquaint themselves with trees.

The dead man here, however, is not looking for trees; he is looking at the shadows, the undersides, the crevices. What is more is that he is not simply looking with his eyes, he is also looking with his fingers: he probes and fingers, as if trying to feel it with the hands, in the same way one would in the absence of sight. However, with this, one imagines the dead man as a solitary man in the forest, closer to the wilderness, long deserted, poking and touching and feeling the undersides of damp, moss covered logs, and peeking through exposed tree roots, barefoot. The dead man sees with his fingers, like tentacles. He spots the mushroom "just in time." Just in time for what we do not know, yet, it could imply just in time for picking when the mushroom is in its prime. Or just in time before another mushroom enthusiast, or a forest critter, or the insects spot it and are there to get it. Or, just in time to avoid stepping on it. Whatever the basis for "just in time" may be, there is almost always a sense of good luck in finding a mushroom. Unless of course, it is signalling the rotting of a beloved potted plant, or the outbreak of a fungal infection on the skin. Hence, the dead man is clearly literate of the countless mushrooms, from the

bioluminescent, fairy tale dwelling mushrooms, to the equally fascinating birds nest fungi. He is not only knowledgeable of what they are, but also knowledgeable of where to find them. And this is not just learned "indoors, out of a book," like learning the trees in Howard Nemerov's poem. It is hands on search combined with field experience. The dead man is engaging with the ground, with the forest, with the trees. Because the nature of mushrooms, whether one is looking for edibles, or is there just for mushrooms' sake, it is most of the time off the trodden path that one gets to see. Therefore, one may find themselves, going out of their way to see mushrooms, stooping to look at them, to pick them, or simply to take a photo. Or like the dead man, one may find themselves touching, feeling, and smelling mushrooms. Schaechter explains that

> [a]ll one's senses come into play when trying to identify wild mushrooms. The eyes revel the most, especially when they are trained to recognize distinguishing characteristics, such as shapes, sizes and colours of the cap and stem, not to mention special attributes such as patches on top of a cap or a ring around the stem. (p. 67)

Besides visual cues, the other senses such as smell can also help identify a mushroom since "[m]any mushrooms have characteristic odors, such as the scent of fresh corn, coconut, anise, almond, garlic, or plain "mushroom." (p. 67). In the same way the dog is smelling, sniffing attentively, and impatiently, for morels, the dead man is feeling with his tentacular fingers. Processing information, and leading on.

The dead man, practices forms of getting to know mushrooms and becoming familiar with places to find them. He knows the rich array of mushrooms, the psychoactive, the micro and macro fungi, and where to look for them: in other words, he practices how to find and identify mushrooms. However, he now encounters a different kind of mushroom:

When the dead man saw a mushrooming cloud above Hiroshima,-

he knew.

He saw that death was beautiful from afar.

He saw that nature is equidistant from the nourishing and the- poisonous, the good and the bad,

the beginning and the end.

He knew the littlest mushroom, shivering on its first day, was a signal.

The partial grammatical parallelism, and the inversion of "he saw" and "he knew," reverberates his awed breathlessness in the face of the mushroom cloud. The mushroom, rises up from the ground again, like the arrow rising up from the ground, or like the mushrooms, appearing overnight, or like the dead man, but this time it is not like Zeno's arrow. He sees this mushroom as beautiful, like the many other mushrooms he saw, and felt with his fingertips. But this mushrooms is beautiful from afar. Like the dead man himself, who is close to, and an acquaintance of death, dwelling on the shores and interstices of death and life, the speaker is dealing with the ugly, the once vile, yet views the death as beautiful, sees beauty in it. The littlest mushroom, shivering on its first day, may refer to the way the first pins of mushroom primordia signal the mushrooms that will follow. It could also suggest that the first mushroom cloud was not the first ever mushroom cloud to be observed. It was preceded by countless other nuclear bomb trials which were a signal for the coming Hiroshima mushroom cloud.

Moreover, mushroom now becomes a verb, to mushroom is "to explode, to appear suddenly" (Schaechter, 1998, p. 28). Or in this case, to take the appearance of a mushroom, as it was the case with the Hiroshima mushroom cloud appearing after the nuclear bomb. The first meaning of the verb "to mushroom" according to the

Merriam Webster online dictionary is “to well up and spread out laterally from a central source” and “to become enlarged or extended.” The second meaning is “to collect wild mushrooms” followed by the last definition “to spring up suddenly or multiply rapidly.” The mushrooming cloud over Hiroshima entails both the welling up and spreading out, and to spring up or multiply rapidly. Hence the verb mushroom becomes a medium to describe all three attributes of suddenness, the mushroom shape, and the nature of its spread at the same time. Moreover, apart from a lexical inosculation, the mushroom cloud forming over Hiroshima becomes bonded with all the mushrooms Bell salutes, from the bioluminescent ones to the bird’s nest fungi, to the foraging stories of morels. In her *Staying with the Trouble: Making Kin in the Chthulucene* Donna Haraway (2016) explains:

> In the tasks of thinking, figuring, and storytelling, the spider of my first pages, Pimoa chthulhu, allies with the decidedly nonvertebrate critters of the seas. Corals align with octopuses, squids, and cuttlefish. Octopuses are called of the seas, not only for their tentacularity, but also for their predatory habits. The tentacular chthonic ones have to eat; they are at table, cum panis, companion species of terra. They are good figures for the luring, beckoning, gorgeous, finite, dangerous precarities of the Chthulucene. This Chthulucene is neither sacred nor secular; this earthly worlding is thoroughly terran, muddled, and mortal—and at stake now. (p. 54-55)

Talking about multispecies storytelling, Haraway knots the stories of the spider, with other tentacular critters of the ocean. She states that “[n]othing is connected to everything; everything is connected to something” (p. 31). Likewise, in Marvin Bell’s poem, everything is connected to something else within the poem. The moss to the mold; mold to soot, soot to ash, ash to fire; fire to morels; morels to dogs, dogs to humans, humans to nuclear war, nuclear war to mushroom clouds, mushroom clouds to mushrooms and death, death to life; life to death, death to decay, decay of a creature to life of a new mushroom…Everything is connected to something. Marvin Bell’s poem invites creatures that are all connected with fungal networks to play

string figure game of cat's cradle, and to engage in a multispecies storytelling. This way, "The Book of the Dead Man (Fungi)" is a poem that offers a new way to look at and experience multi-species living and dying together.

CHAPTER 5

CONCLUSION

A solution to plant blindness is possible not only through familiarity with science but also with complementary ways of knowing plants. The poets discussed in this thesis mostly incorporate science literacy in their own ways into their poetry. In addition to scientific literacy, an exuberantly rich plurality of voices collaborate to tell plant and fungus stories. These diverse ways of knowing contribute to knowing and acknowledging plants and their associates, and prepare the ground for multi-species stories to be told.

Howard Nemerov, through the example of trees, opens a window into the language of plant systematics and offers us spectacles to see plants using relevant search criteria for identification and classification. The poem integrates poetry and the science of botany to come together and reflect on the possibilities and limits inherent in each language in "hearing" and "speaking" trees. Nemerov's speaker demonstrates the necessity of a comprehensive understanding of plants in the face of a reductive "scientific" effort to categorize. The poem prepares the reader to expect a multi-voiced, multi-perspective story of the vegetal other, and most importantly, reminds one to adopt a perspective that allows for wonder and mystery, gaps that cannot be filled by science alone. Furthermore, "Learning the Trees" serves as a starting medium to raise Gary Snyder's questions regarding the experience and literary representation of nature. It questions the central concepts of science such as objectivity and accuracy, and indicates the gaps that the language of systematics entails, emphasizing the necessity of what Robin Wall Kimmerer phrases as "not an

intellectual “monoculture” of science, but a polyculture of complementary knowledges” (p. 139).

Both Roethke poems, “Long Live the Weeds” and “Weed Puller” engage in different forms of perceptional alchemy in that they both transform the way the reader sees weeds. “Long Live the Weeds” transforms the vegetal pariah, the vegetal outcasts, into monarchs, whereas “Weed Puller” transforms the passive gaze into an active seeing by opening a window for one to see and actively engage in the dynamics of the garden with the help of sensuous poesis. Therefore, in the same way phytoremediation remediates the land via the help of plants and their associates, Roethke’s poetry contributes to and transforms the perception of weeds with the help of sound, images and metaphor.

A biologically different yet conceptually congruent botanical subject is explored in the poetry of Gary Snyder, Mary Oliver and Marvin Bell: namely mushrooms. In Gary Snyder’s terms, nature literacy, place literacy and science literacy are markers of all three poems. However, such literacy distinguishes the poems specifically in their preference and ability to keep the dialogue between the poetic and the scientific elements in harmony, without one voice tyrannizing the other. Gary Snyder relates the story of mushrooms from the frame of mushroom hunting, which strictly requires one to be attentive to his/her surroundings, as well as being well acquainted with mushrooms. Mushroom hunting is an event in which nature literacy, place literacy, and mushroom literacy is not optional but imperative, and nature is unforgiving of ignorance in either. Snyder’s playful language contrasts and thereby accentuates this. Mary Oliver on the other hand, diverging from the mainstream tendency, focuses on the inedible varieties of mushrooms. Along with conjuring the enchantingly rich diversity of mushrooms, through sensuous poesis,

Oliver engages the reader in the cyclical journey of mushrooms starting from underneath the soil, following through its strife to surface, to form its fruiting bodies and distribute its spores and return to the ground and decay. Marvin Bell on the other hand, stories mushrooms from the perspective of the "dead man," which enables the divisional boundaries between life and death, thriving and decaying, between mushroom and non-mushroom to dissolve. While all three poems richly immerse themselves in biologically, and geographically informed mushroom stories, Marvin Bell's "The Book of the Dead Man (Fungi)" diverges from the other poems in that, to use Donna J. Haraway's words, it offers a multi-species game of string figures as it entangles mushrooms with different companion beings, and concepts ranging from morel hunting dog companions to the Hiroshima mushroom cloud, which prove generative of a vast and richly inter-connected, multi-species fungal network.

While the poems feature different botanical subjects, they all incorporate elements of Snyder's premises on new nature writing, and his richly inclusive depth ecology of the dank, mouldy, transgressive and parasitic side of nature. In other words, the poems all offer different ways of understanding and relating to the vegetal/fungal "other." This reinforces Nemerov's concluding stanza, which suggests that in spite of having acquainted oneself with botany, its terms and Latin names, the trees still have much more to reveal.

> And think also how funny knowledge is:
> You may succeed in learning many trees
> And calling off their names as you go by,
> But their comprehensive silence stays the same.

Trees do not readily lend themselves to scientific endeavours to understand. Namely, one could come to explore trees in their multifarious aspects through different ways

of knowing. The diverse interplay of complementary knowledges comes to fruition in the poems. While the cross-fertilization of the botanical and the literary takes place as an over-arching thread connecting all poems, a cross-fertilization between science and local plant/mushroom wisdom, or between living and decomposing, between the biological and the historical, between plant and fungus, and the non-plant organisms, also takes place, forming little threads bonding them within mycorrhizal and rhizomatic networks.

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